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ABSTRACT

This handbook describes the seventeen most popular and effective items made in the Philadelphia Teacher Parent Center. The handbook recounts not only "how-to-do-it" strategies for use in a teacher center but also tips on how to store, present, explain, and use items. Research done on the teacher center involved two separate survey forms which analyzed the effectiveness of the learning experience. Observations and suggestions culled from teachers and parents draw on a myriad of information concerning topics such as the age appropriateness of materials; classroom vs. group size; the importance of making organizers, such as bookshelves and file boxes; and the importance of parent participation in projects. Other areas investigated included the questions of: "What topic was taught with this item?" and "How did you use this item in your classroom?" Suggestions for teacher center activities include uses for bingo, blocks, cubes, calendars, carrels, clocks, color words, the hundred board, and puzzles. (JN)

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A TEACHER CENTER'S GREATEST HITS

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A TEACHER CENTER'S GREATEST HITS

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September, 1980

This Handbook is dedicated to
Lore and Donald Rasmussen,
whose efforts, creativity, expertise
and above all else
loving concern,
are everywhere apparent in the
Philadelphia Teacher Parent Center.

THANKS!

Bill Herring and Kathleen Devaney of the Teacher Center Exchange

Fred Locke's collection of eraser stamps, the handiwork of many carvers

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INTRODUCTION TO THE RESEARCH

A clatter of saber saws breaks the still morning air. Heat rises from the laminating machine. The long arm of the paper cutter slices sharply down. The band saw shrieks as it bites into a piece of triwall.

"I should have worn my blue jeans!"

"Wait until I tell my husband! What is that tool called again?"

"My kids are always anxious to know what I have made when I come back after a day at the Teacher Center."

"It doesn't fit in my car!"

"I'm exhausted!"

"Thanks. It has been a wonderful day."

All the hustle-bustle, the dust, the fatigue, the words; what does it all mean? What is the outcome? How do participants perceive a teacher center? Do they leave with what they came for? Are they richer for the experience? What happens, back in the classroom, to the things they have made? Are they effective for the teacher? For the student? Do they last?

With the support of the Teacher Center Exchange we have tried to answer these questions in a form that would be of direct practical value to other Teacher Centers.

This is a handbook of our Greatest Hits; the seventeen most popular, most effective, and most durable items made in the Philadelphia Teacher Parent Center, in 1979-80.

In sharing the results of our research and in describing procedures that have worked for us, we have tried to create a way to view these products from the inside and the outside, from advocates and from consumers, through the eyes of teacher center participants, teacher center staff people, and teacher center researchers. Through the description of the items comes a picture of a teacher center, its attitudes, its approaches, its methods, its physical structure, its personnel and its personality.

Primarily however, this is a how-to-do-it book. More specifically, it is a how-to-do-it-in-a-Teacher-Center book. We have made a point of defining those elements of the process that we felt could be helpful to other Teacher Center practitioners; not just how to make it, but how to store it, present it, explain it and use it.

"People making things" has been an essential function of our center ever since it started

in 1967 with a saber saw, a hammer, and some scrap wood in the trunk of Don Rasmussen's car. In the years since then we have developed an extensive collection of learning aids, educational furniture, and effective techniques for fabricating them. Concurrently, we have developed curriculum supplements and directions and strategies for using them with children.

The staff of the Philadelphia Teacher Parent Center, in collaboration with the Office of Research and Evaluation of the School District of Philadelphia has evaluated the effectiveness of these teacher and parent-made materials in order to:

(1) analyze the quality of this essential element of a Teacher Center's service

(2) develop a prototypical research model, for ourselves and others, to continue this evaluation in the future, and,

(3) publish a handbook of the most successful items.

The primary goal of our research was to identify the most popular, effective, and durable items made in our center, so that we could share them with others. Our findings are informally presented in the item Description pages. A formal presentation of research data, process, and instruments, can be found in the Appendix.

In a rough sense, this research confirmed our intuitions. In a survey conducted at the outset of the project, each staff person was asked to identify the most frequently made items. Each staff person identified about half of the items we ended up including.

It perhaps goes without saying that they did not identify the other half. Most people included some items on their "most frequently made list" that were, in fact, not made most frequently. Thus our sense of the situation was generally right but not precise.

The staff was also asked to identify the best items. No individual identified more than eight of the seventeen ultimately included. However, most of the items that were identified as being "best" by the staff are included.

There are no real surprises among the items ultimately selected. The list feels right.

We realize there are certain dangers in selecting items on the basis of popularity. First of all, popularity does not necessarily mean quality. To keep clear on this issue we also evaluated for effectiveness. We do feel, however, that by and large, teachers and parents make a careful decision when they choose to spend their energies making something; it is a thoughtful choice, not a faddish, frivolous one.

A second and potentially greater danger in selecting items on the basis of popularity is the hazard of ignoring the experiences of people who design and build projects to fill an important and unusual need. This creative experience and the quality of staff involvement can often be greater on an original item.

But then again, our goal was to be of practical value. How many teachers need a traveling case for a hermit crab? To provide a picture of the diversity that arises, we have included, in the appendix, a list of the more than 400 different items people reported that they made.

Specifically our research process involved two separate survey forms. Both of these were designed to be as easy as possible to fill out. We spent many hours trying to simplify this information gathering process.

The first survey form was a pocket-sized card designed to be filled out at the center. Starting in September participants were asked to identify what they made, and then to check off responses about their perceptions of the Center.

In late January we tallied the results and determined the sixty most popular items. We then sent a second evaluation questionnaire to everyone who had made one of the most popular items.

Specifically, participants were asked "How effective was this item in helping you to better organize, prepare, and present your instructional activity?" They were asked to check off either Very Effective, Somewhat Effective, or Not Effective. Every item in this book was rated Very Effective by a majority of respondents.

Participants were also asked "How effective was this item in helping students learn what was taught?" Again they were asked to check whether it was Very Effective, Somewhat Effective, or Not Effective. And again, every item included in this book was rated Very Effective by a majority of respondents.

In cases involving furniture we asked, "Does this item contribute to your students' learning process?" Seventy-nine percent (79%) of the respondents indicated that the furniture they made did contribute to their students'

learning process.

The items were also evaluated in terms of durability.

We have included in the book only items which a majority of respondents indicated were "showing normal wear and tear." Less than 4% of the participants described their item as being "in poor condition" or worse; not bad figuring amateur labor and use by children! Material shortcomings and maintenance suggestions are included as part of the item Descriptions.

Specific research data on effectiveness and durability appears in the Appendix.

The questionnaires gave us other information as well.

We found out that items people make in our Teacher Center are used in the classroom. This may seem a simple-minded conclusion, but several staff members were unsure of this fact beforehand. "Are items made and then left on a shelf?" "How often are things ignored?" "Do teachers really make the things they need? Or do they just pass time?" "We have no information, it's guesswork. We must go beyond our assumptions and get teacher evaluation of how these things work."

Data showed that the items were heavily used. Teachers reported that a vast majority of the items were used more than eleven times.

We also found out a lot about how these things work. Every teacher or parent, who returned a questionnaire specified uses to which they had put the items they made; topics taught, and instructional activity used. We learned new uses for every item included in this book.

This information is on the Item Description pages. It has widely broadened our staff's perceptions of the uses of Teacher Center made items. For instance, a calendar was used for teaching multiplication by seven; a room divider was used by children changing for gym.

We came out of this experience with a real sense of the thoughtfulness of teachers; that they really put their heads to work in figuring out what to make, and then in making it work for themselves, and their children, in the classroom.

These teachers communicated to us a warm sense of fulfillment in their experiences at the Teacher Center. Thankful, appreciative, even loving comments appeared, unsolicited, on 34% of the survey cards. We are deeply appreciative of these thoughts.

This research project, including the development of this book, has been an exciting experience for each of us at the Teacher Center. We learned new uses for many items. We learned about weak points in some, which hopefully we can rectify.

Writing about these items, their presentation, design, and fabrication, demanded a terrifying, yet enlightening objectivity. We found ourselves listening to our own words more closely.

The collaborative effort between researchers and practitioners was rewarding and successful. We were able to communicate clearly (at length, in depth, and honestly) and able to develop effective research instruments that uncovered useful information, no mean accomplishment!

There are many questions we did not answer. Looking at a teacher center through its products provides only the most limited perspective. This approach by and large ignores a tremendously important aspect of a Teacher Center: its effect on people. A Teacher Center is an educational experience, not a factory.

Some questions that bear looking at in the future include: What is the nature of the learning experience that a teacher goes through at the Teacher Center?

Does making things carry people further?

How can we expand the fabrication process to maximize insights into the learning process?

Does the use of patterns add or detract from the quality of the creation process?

What would an in-depth analysis of the classroom effectiveness of these items reveal?

Are the items worth more to children because their teacher made them?

Are there perceptible learning gains directly attributable to these items?

While we do not yet have the answers to these questions we do have the confidence that researchers and practitioners can, with care and effort, find them.

This research has moved us further along the road. We have a clearer perception of our role as an institution; of the service we provide and the effect we have. We also have a clearer

perception of our roles as individuals within the institution; our words, our approaches, our goals. And we have more clearly defined obligations; to share what we have learned and to continue to ask the questions. As we evaluate ourselves next year with these same instruments we can hope to further expand the shared knowledge of a lonely profession.

INTRODUCTION TO THE GREATEST HITS

The pages describing the Greatest Hits are a synthesis of our research and our experience.

The items have been selected, used and evaluated by our participants. You will see their perceptions of the product and the process.

You will also see the Greatest Hits from the point of view of a Teacher Center staff person; how each item is displayed, stored, introduced, designed, and made.

A key element of each of these items is flexibility. We tend to set out very clearly defined samples for teachers and parents because this helps them get started. This approach disguises the fact that there are myriad adaptations for each. It is often productive to brainstorm with a teacher about other potential uses for an item just completed.

These items have been sifted through an organizing matrix to be sure that the selection is well rounded. There are activities suitable for small groups as well as the whole class. There are Language Arts and Mathematics activities for pre-school, early-elementary, and older-elementary age children. There are items that can be used for teaching any subject to students of any age. There is a balanced selection of classroom furnishings.

Every item included has been made <u>both</u> in our Teacher Center <u>and</u> at traveling workshops in other schools.

Every item is highly rated in terms of popularity, effectiveness, and durability.

DESCRIPTION

Each item is described by a Teacher Center staff person. The description focusses on the nature of the item; how it teaches as well as what it teaches; why it is a valuable teaching tool or asset in the classroom. Creative adaptations that are not part of the primary function are also noted.

OBSERVATIONS FROM TEACHERS AND PARENTS

In many cases this section will start with a quotation from a participant or an anecdote noted by staff members, gathered in conversation, or communicated to us in the research process.

<u>Age Appropriateness, Group Size, Suggested Classroom Use</u>

This information is drawn from a matrix based on pre-survey assumptions, and input from

Teacher Center staff. The information was later modified by participants' responses based on their own classroom experience.

Maker Characteristics

This information was drawn from our Sign-In Register. Dots indicate the types of participants that made each item most frequently. It is interesting to note that at the Teacher Center teachers tended to make furniture and aides tended to make learning games. At travelling workshops, aides tended to make more furniture.

"Had you planned to make this item before you came to the Center?"

This information was derived from cards completed by participants at Teacher Center sessions. Participants were asked, "What did you plan to make or do today?"

It turned out that people who made organizing devices such as bookshelves, cubbies, file boxes and organizers had planned to make them before they arrived at the Teacher Center.

"How did you decide to make this item?"

This information was taken from cards completed by participants at the close of Teacher Center sessions. Dots indicate the highest number of responses in a particular category.

"How did the staff help in the creation of your item?"

This information was taken from cards completed by participants at the close of Teacher Center sessions. Dots indicate categories with the highest number of responses.

This information indicates the levels of staff involvement required in the fabrication of the various items.

"What topic was taught with this item?"
"How did you use this item in your classroom?"

Teacher Center participants who made popular items were asked to evaluate them in terms of effectiveness and durability. Those who made furniture were asked how they used the item in their classroom. Participants who made learning aids were asked to identify the topic taught with the item and the instructional activity in which the item was used.

In almost every instance we discovered new and unanticipated uses for these items. This information has expanded our ability to help more recent participants make effective use of their creations. It also helped our staff; one person said, "I never believed before, that the things made here were really used, and really made a difference in classrooms."

Comments

As part of the second survey we asked participants to respond to this statement: "It is important for the Teacher Center staff to learn what comments, criticisms, or suggestions you might have regarding the use of this item." The comments recorded are a sampling of the reactions which we received from the participants.

PRESENTATION

This item is displayed in the Teacher Center:

This list indicates where the item or information about the item may be found in the Teacher Center.

All items in the Teacher Center are either on display, in use, or in a labelled drawer. Those items which we are not able to keep actually in the Teacher Center are in the Teacher Center Photograph Book. The Teacher Center Sampler is a booklet of drawings of a sampling of the variety of items which can be made at the Teacher Center. The Traveling Teacher Center Poster and a reduced version of it used as a handout, are distributed at a school site before a Traveling Teacher Center Workshop.

The narrative section under PRESENTATION was written by staff members. When given the assignment of writing an item description each staff member was reminded that the emphasis is on the item in the context of a Teacher Center. Therefore, they were asked to put themselves into the situation they were describing (e.g., presentation of an item) and to recall as exactly as possible what they normally say in that situation.

When writing these presentation descriptions, staff members were asked to include the words and phrases they use to help the participants think through the usage of the item once it is introduced into their classroom. Some questions addressed in this section are:

How many items will they need?
How many students?
Skill levels of the children?
Space in the room?
How to store it?
How available will the item be in the room?
Amount of anticipated usage?

DESIGN

Some items have to be specially designed everytime they are made, others require only minimal design attention. Thus the design sections vary significantly.

Some questions addressed in this section are:

How high, how wide, how deep . . .?
Will it fit in your car so you can get to the classroom?
Will it fit in your classroom?
Will it fit in your children's hands . . .?

In some instances the design issues are minimal or do not exist and therefore a design section hasn't been included.

MAKING IT

Materials and Tools

We have listed the tools and materials that we use in fabricating each of these items. In all cases the same ends could be achieved using other equipment, either simpler or more sophisticated. In cases where we use an unusual tool or material we have tried to suggest readily available alternatives.

Aids to Fabrication

Here we have indicated some of the ways we have developed over the years, to expedite the process of making an item, while still enabling the participant to have a significant learning experience. Most of these aids to fabrication eliminate unnecessary effort by the participant and redundant efforts by the staff, enabling them to be accessible in more important ways.

Many items are on display in the Teacher Center. They also act as models from which to take measurements or general ideas.

As a short-cut we sometimes do extensive precutting of small pieces which get used in a hurry, such as the legs, bases, and arrows used for spinner boards.

We use templates for laying out popular items. These have been developed primarily for complicated or time-consuming measuring jobs which the staff would normally do because they are so much more familiar with the design of an item. There is, for example, a template for laying out a study carrel, an item with both vertical and horizontal planes and intricate

connections. Templates are also used for Color Words. The letters for these are designed to overlap yet be easy to read and relatively easy to cut out.

Of course, in all instances participants are welcome to come up with their own ideas and designs. They often do.

In some cases we have posted instructions on how to do things. These are generally used for reference, as in the case of laminating, when someone wants to check the proper temperature for the press.

We have used the right-hand margin to illustrate many of these aids to the fabrication process.

The MAKING IT narrative is a step-by-step process description by a staff member. It includes tricks of the trade, descriptions of special drilling and cutting jigs, and most significantly, the words they use along with the process--the phrases that can make a teacher feel comfortable with an unfamiliar tool or ease a parent aide past a potential disaster.

MAINTENANCE

This section includes feedback which we have received from participants about the durability of the item once it is put to use in the classroom.

We have included all adverse comments and are trying now to incorporate them into our own presentation, design and making-it processes.

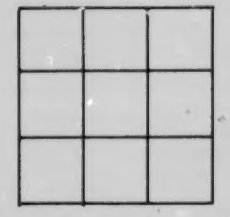
CREDITS

We have cited sources when possible. Many of the items are based on ancient designs. Others have evolved from the expressed needs of many individuals. Still others just seemed to appear on the scene.

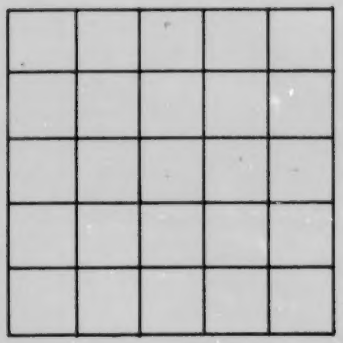
BINGO

DESCRIPTION

Bingo is a fun, highly motivating game used for reinforcing many concepts and teaching others. Teachers and aides have reported great success in teaching colors and new vocabulary words as well as reinforcing spelling words, phonics, math tables and money concepts. In order to play this game, each student is given a card, divided into 6, 9 or 25 frames on which is information appropriate to the topic or skill being reinforced. The student then must listen carefully to hear the nature of what is being called out so that they will know what space to cover on their card frame. This is a highly competitive game in that the winner is the first child to cover up a row of spaces whether diagonal, horizontal or vertical. While luck is an important dimension, careful listening may make the difference in who wins particularly if the student has to infer the answer in order to cover his space. For example in "Addition Bingo" - a reinforcement of addition skills, the teacher may call out "5 + 3". The child who hears the facts correctly and who can tally correctly will be able to cover "8". Those who have difficulty paying attention will not have an easy time winning.



Bingo games are appropriate for all ages as well as being able to be adapted to teach many skills and subjects. Among our collection of Bingo games you will find contraction action, and blends as well as the many Bingo games named for the skill or subject taught . . . Money Bingo, Word Bingo, Color Bingo, Phonics Bingo, Day by Day Bingo. Bingo directions are included with each game with particular variations listed for each when appropriate.



Bingo - the general name given to a series of games usually known by the skill it reinforces - Contraction action, Blends, Money Bingo, Math Bingo, Word Bingo, Phonics Bingo, Day by Day Bingo - "design your own" Bingo.

OBSERVATIONS FROM TEACHERS AND PARENTS

Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- Individual
- • Small Group
- • Large Group

Suggested Classroom Use
- • Language Arts
- • Mathematics
- • Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- Teacher
- • Aide
- • Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- • No

"How did you decide to make today's item?"
- your own idea
- • display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- • measuring
- • cutting pieces
- • using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"
- Colors
- Vocabulary
- Math
- Addition
- Phonics
- Reading
- Multiplication
- Listening Skills
- Initial Blends

Comments

"The children like to win the game, so this gives them more motive to learn the answer."

"This item was very effective in developing listening skills."

5×5	3×4	2×3	4×4	1×6
6×6	4×5	3×3	2×2	2×7
7×7	5×6	FREE	2×5	2×8
8×8	6×7	3×15	3×6	2×9
9×9	7×8	3×5	4×6	2×6

25	12	6	16	6
64	20	9	4	14
49	30	FREE	10	16
36	42	45	18	18
81	56	15	24	12

"The children know that in order to win at Word Bingo they must know their vocabulary words. This game gives children the incentive to study their Word List."

"We now have 22 out of 25 four-year-olds that know their colors. I am still working on the other three."

"Use Blendo cards once a week, usually Friday. The children look forward eagerly to this activity. During reading lessons all week, they watch for and pick out Blends to remember for activity."

"Blendo is an excellent device for reinforcing or teaching the concept of initial blends. Such devices add immeasurably to a student's chances of learning."

cat	Dan	pot
see	fan	can
car	far	cot

bl	cl	dr
pr	cr	tr
pl	br	gr

PRESENTATION

This item is displayed in the Teacher Center

- at all times
- for workshops only
- • kept in labelled drawer
- sample in use
- on Traveling Teacher Center Poster
- in Teacher Center Sampler
- in Teacher Center Photograph Book

In presenting this item to a group I generally say, "Here is a game that many people like to make because it can be tailor-made to that skill which you are currently teaching. One particular game (Blendo) was made to reinforce the skill of learning blends but you could make a similar game to reinforce most math skills and other language arts skills. Note that there are several ways to play this game - there is one set of cards with blend sounds on them - the teacher makes the sound and the child covers up the space of that sound. In the second game, the teacher calls out a word that begins with a blend. When the child recognizes the sound he covers up the corresponding space. If anyone would like to make a set of Bingo cards, I will be glad to help you set up a grid appropriate to your students and on a topic in which you have interest."

MAKING IT

Materials
Posterboard
Magic marker

Tools
Rulers
Paper cutter (or scissors)
Laminator (or clear contact)
Exacto knives

Aids to Fabrication
models
- templates
- pre-cut pieces

posted instructions
- classroom use handout

How long does it take to make this item?
0-½ hour
- ½-1 hour

1-2 hours
2+ hours

Staff member often provides posterboard cards 5½" x 5½" cut on the band saw as part of routine cutting of spinner board faces. "Here are the cards - how many children will be playing at one time? You'll need one card for each participant so here are 5(10, 15) cards. Start by ruling off all the spaces - here is a template that will help you." I say, "Here, place this card on top and mark . . ." If people are making several types of Bingo games I suggest that they use either a different magic marker for each game or a different color of posterboard. If the participant is making a Color Bingo - I give them several choices. They either must use white posterboard and colorful magic marker to color in the spaces or dry mount color chips to the frames when using posterboard in a pastel color. In both, I suggest that they outline the figure of color with dark magic marker so that the color will stand out.

I also suggest that the grid lines are done in magic marker to enhance the visual space.

MAINTENANCE

It's important to laminate these cards to assure durability.

CREDITS

Games of the World
by V. Grunfeld
Holt Rinehart and Winston
New York, 1975

Learning through Play
Jean Marzoko and Janice Lloyd
Harper and Row
New York, 1972

Narrative sections by Penny Allison.

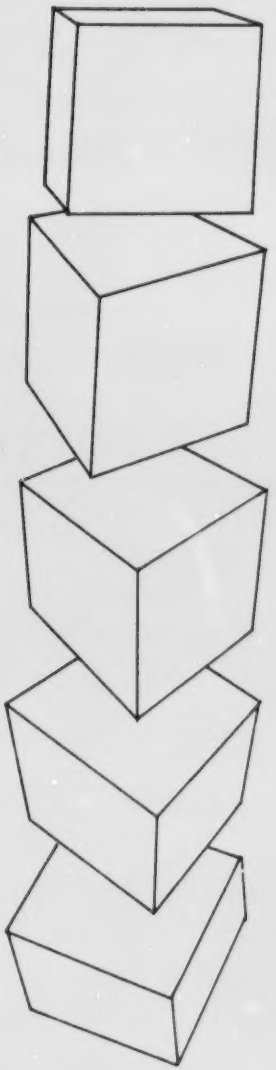
BLOCKS, CUBES, DICE

DESCRIPTION

Many of the cubes made at the Center become parts of games in which the cubes or dice are themselves the primary playing equipment. One of these, Roll-a-Word, is a consonant-vowel-consonant game. Word Tumble, a similar game, uses five word cubes: One each for pronouns, verbs, auxiliary verbs, modifiers and nouns. At least two sentences, (a statement and a question) may be formed from each throw of the cubes. Forming the sentences requires reading the words. Deciding whether they're sensible or silly develops comprehension. Number Tumble uses three numbered cubes, one showing operations (+, -, x) and one showing relations (=, $>$, $<$). From one throw of the cubes a player may be able to construct several true mathematical sentences, though some throws allow only one or none at all. The game motivates both computation and the use of mathematical notation. Boggle, taken from a commercial game, uses 16 lettered cubes shaken down into a rectangular array from which players try to find words by proceeding horizontally or vertically.

In addition to these uses there are the activities involving the use of blocks and cubes for their geometric properties. One teacher tells of asking children to find the big, bigger and biggest; the long and short; the long, longer and longest blocks, and of using them in building. At another level of sophistication the Soma Cube is a three-dimensional puzzle consisting of seven pieces easily constructed from individual cubes. The pieces can be assembled to form a large cube. (See presentation section for a more complete description.) This is a challenging experience in three-dimensional spatial perception.

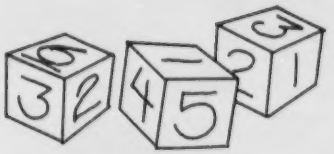
Many blocks and cubes leave the Center in raw form or painted in attractive colors to be used according to the maker's imagination. Teachers report using them for counting, sorting, showing number concepts and matching and identifying shapes. Lettered cubes have been used as alphabet blocks or to make words from other words by changing the first and last letter, for making rhyming words by changing a letter, and for making words using blends and digraphs with word endings. Numbered cubes have been used for showing an answer rather than writing or saying--a motivational device which seems to have stimulated the children.



It is impossible to describe all the uses made of the hundreds of blocks and cubes produced in the Teacher Center each year. Many are fashioned into dice for playing games and as such do not provide the primary focus of the game but serve only to determine the moves. As one teacher said, when asked to evaluate the effectiveness of the dice she had made, "Dice are dice! I could have brought them, made them, or used a spinner. What the children liked was the game."

Children do, however, gain skill in addition when dice are used to play such games as Cover-Up, Take 15 and the Bean Stick Game, or skill in subtraction from variations of Cover-Up and Tug-O-War. In playing Patch, one learns to associate fractional parts with the names on the dice. Now You Have It, Now You Don't makes maximum use of numbers on two dice because the numbers must be added, subtracted, multiplied and divided to determine a move. Black Hole and Contig do the same with three dice.

For all of the previous games the dice usually show numerals rather than dots to encourage mental computation rather than counting up. But dice with dots do have their place in games which are designed to foster understanding of one-to-one correspondence and counting, such as the Games of Territory. For the pre-schooler, board games played with a color die (each face different) gives experience with identifying and naming colors.



OBSERVATIONS FROM TEACHERS AND PARENTS

Age Appropriateness
- Pre-K
- K-3
- 4-6
- All Ages

Group Size
- Individual
- Small Group
- Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"

- Yes
- No

"How did you decide to make today's item?"

- your own idea
- display
  introduced by staff
  suggestion of co-worker
  other

"How did the staff help in the creation of your item?"

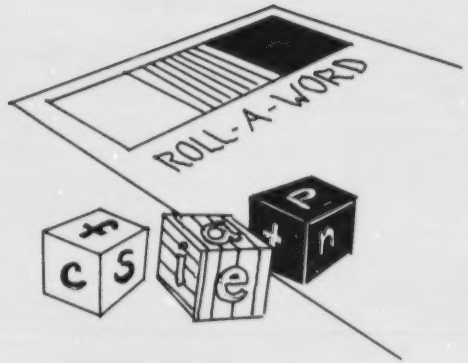
  designing
- measuring
- cutting pieces
- using tools
  finding references
  cheerleading
  someone helped me
  I did it all myself!

"What topic was taught with this item?"

Math skills
- Multiplication tables
- Addition
- Number concepts

General
- Shapes
- Colors
- Library skills

Language arts skills
- Building words
- Vowels and consonants
- Sentence structure
- Phonics
- Blends and digraphs
- Rhyming words
- Beginning and ending letters



Comments

"The blocks and cubes are a well defined part of our classroom work; counting, building, colors and teaching concepts (before and after, long and short, etc.). The blocks are always in use."

"I found the children enjoyed learning the vowel sounds; fun instead of complicated."

PRESENTATION

This item is displayed in the Teacher Center

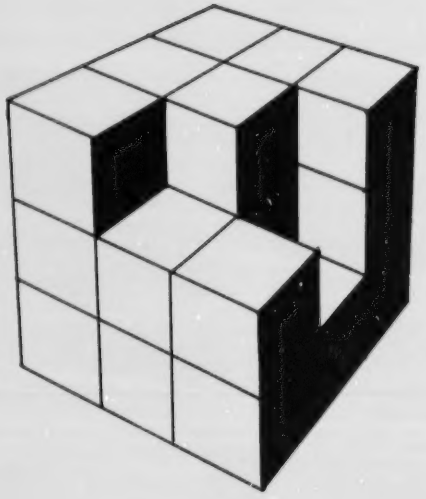
- at all times
  for workshops only
- kept in a labelled drawer
  sample in use

on Traveling Teacher Center Poster

- in Teacher Center Sampler
  in Teacher Center Photograph Book

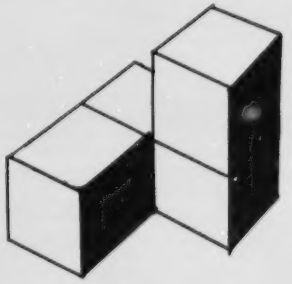
When blocks or cubes are used as dice in a game their purpose is fairly obvious, so I may simply point out what numbers or symbols are used and that the cubes themselves may be made in the shop. Occasionally I mention that spinners or cards drawn from a pack are equally effective devices for determining moves.

If the cubes are used in sequence to generate words or sentences it is most effective to invite the participant(s) to throw the cubes a few times and see what words or sentences can be assembled. We then examine the cubes individually to see what appears on each face. This is fairly important in presenting a game such as Word Tumble, since if the participant doesn't notice that each cube exhibits only one part of speech, he or she may produce word cubes which rarely form sentences, which will be disappointing and frustrating. For Word Tumble I also mention that our parent assistant, having painted each cube a different color, found that her son was making sentences without reading at all--he had simply memorized the color order. She promptly repainted them all the same color.



Most of these games can also be used as individual activities so I sometimes encourage the potential user to think about how he or she would like to use it as a solitaire game, cooperative group endeavor ("See how many words you can make!) or a competitive game, and, if the latter, for how many children. Cubes are quickly made, so if they are to be used as a solitaire game it might be possible to make enough sets to accomodate several children, or to make sets with variations appropriate for different levels of skill.

In a special case of the Soma Cube, I enjoy beginning with 27 individual cubes rather than with the 7 pieces of the puzzle. The first challenge is to build a larger cube with these; then (if the participant has built a 2 x 2 x 2 cube) an even larger one. By the time this is solved everyone knows what a 3 x 3 x 3 cube looks like and is ready for the challenge of trying to construct one just like it using the 7 puzzle pieces. After a reasonable period of trial and error, those who want to continue can be invited to make one. It helps later



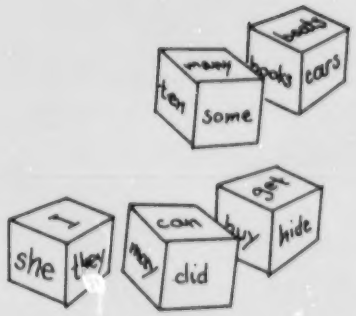
in the construction to note that the 7 pieces consist of all possible three-dimensional shapes which can be made from four cubes assembled face-to-face, with one cube removed from the "long one."

DESIGN

A cube is a cube, so it isn't possible to fool around much with the basic design. As we generally have three kinds of ballister stock (1 1/8", 1 3/8", and 1 5/8") there are three choices of size. I try to encourage the participant to think about which size is easiest for the children to hold, roll, read and manipulate. Teachers of young children seem to prefer large cubes, but these may not be appropriate if five at a time must be held and rolled.

Painting is partly a matter of individual aesthetic taste, but also adds to durability and prevents blurring of ink when the cubes are marked. I recommend painting unless it seems very important to the participant to finish in a few minutes. Then I suggest treating the cubes to a coat of clear finish at home before using them in the classroom.

What is written on the cubes is often prescribed by the rules of the game if they are to be used that way, but this is rarely sacrosanct. I urge the game-maker to think carefully about departing from the sample if it doesn't meet the needs of the children--doesn't provide quite enough challenge or is too difficult. Current reading vocabulary can be used for Word Tumble, instead of the words used in the sample. Larger or smaller numbers and fewer operations may be used for Number Tumble, blends instead of initial consonants for Roll-a-Word, larger numbers for Cover-Up. The effects on the game must then be thought through before the change is made.



MAKING IT

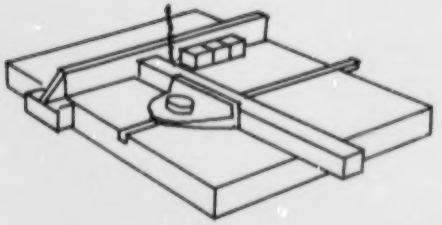
Materials	Tools
Ballister stock	Bandsaw
Paint	Paintbrushes
Markers	Sander or sandpaper

Aids to Fabrication	Time to Make
model	0-½ hour
template	• ½-1 hour
• pre-cut pieces	1-2 hours
posted instructions	2+ hours
• classroom use handout	

Directions Available	
The Game of Territory	Black Hole
Take 15	Word Tumble
Contig	Number Tumble
Cover-Up	Soma Cube
Count-Up High	Patch
Bean Sticks	Now You Have It--Now You Don't

Cubes are simply made. Once one selects a size, a staff member sets the band-saw guide to the width of a ballister stock.

"We'll brace the end of the ballister stock against this guide on the left, and push the sliding guide up to meet it through the blade. That keeps it square. Now pull the stick and guide back, slide the stick to the left and repeat the whole thing."



If the participant wants smoother cubes I show him or her the disc sander. "Hold the cube firmly against the disc here on the right side. Look at it now. Is it smooth enough? If you want to you can bevel the edge like this by holding the edge to the sander at a 45 degree angle." If the machine is occupied or the participant would prefer to do the smoothing by hand, I show him or her where the sandpaper is.

For the painting process I advise putting on a cover-all, while I get an appropriate brush. "If you use a thin coat it will dry faster. You can avoid getting a ridge of thick paint here by stroking toward the edge. If you hold the cube by two corners you can probably paint all six faces at once. Then you can set it on this chicken wire rack to dry. This is water-base paint, so when you've finished you can wash the brush in water over there and put it back on the brush holder."

CREDITS

Dice and cubes are so widely used that they are mentioned in many publications describing games.

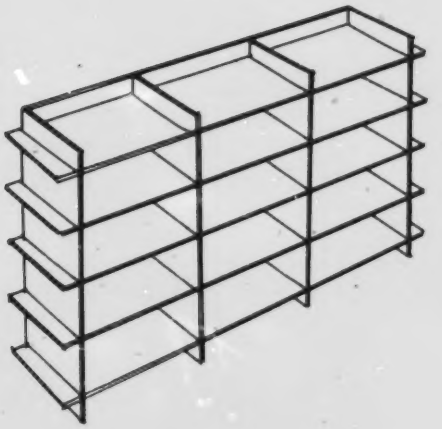
Math Games with Cards, Chips and Dice to Strengthen Basic Mathematics Skills
School District of Philadelphia
21st & the Parkway
Philadelphia, PA 19103 1973

Boggle. Parker Brothers Div. of General Mills Fun Group, Inc., Salem, Mass. 01970.

Narrative sections by Julie King.

BOOKCASE

DESCRIPTION



Triwall bookcases have always been a popular item at our Center. They can be made almost any size and with almost any shelf arrangement.

In the classroom, bookcases have been used to store games, ditto sheets, reading and math activities, and, on occasion books. They have also been used for display and storage of children's work. The bookcase itself can be used as a room divider, and the back of the bookcase, as a bulletin board.

OBSERVATIONS FROM TEACHERS AND PARENTS

"I love my bookcases!!! Many of my peers have complimented me on them and have been impressed by my 'skills.'"

Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- Individual
- • Small Group
- • Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- • Classroom furnishings

Maker Characteristics
- • Teacher
- • Aide
- Parent

"Had you planned to make this item before you came to the Center?"

- Yes
- No

"How did you decide to make today's item?"

- your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"

- designing
- measuring
- cutting pieces
- using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"How did you use this item in your classroom?"

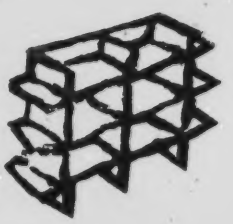
- To store
  - shoe box games
  - books
  - games
  - ditto sheets
  - children's work folders
- Library in classroom
- Book display
- Use at home
- Reading activity games, entire bookcase
- Math activity games, entire bookcase

Comments

"Each subject now has a bookcase containing supplementary books, games, etc."

"A valuable asset in a cluttered, no space, classroom."

"Materials on eye level added to their accessibility--bookcases were designed for size of my students and painted bright colors."



PRESENTATION

This item is displayed in the Teacher Center

- at all times
- for workshops only
- kept in a labelled drawer
- sample in use
- on Travelling Teacher Center Poster
- in Teacher Center Sampler
- in Teacher Center Photograph Book

When a participant asks to make a bookcase he is asked:
"How large would you like it to be? It can be up to 6' long and 4' high. How will it be used? How much space do you want between the shelves? The top shelf is no less than 3" below the top, and the bottom one 3" above the floor. (This is necessary for strength.) If it is to be 48" high, that leaves 42" to be divided into the number of sections you want. Do you want a larger bottom shelf than the top shelves or would you like them all to be the same?"

The number of upright supports depend upon the amount of weight the shelves are to support. One upright every 12" to 15" of shelving is sufficient for heavy books.

The participants are also given the choice of 10" or 12" wide shelves. Ten inches is the common width of wood shelves but we usually make them 12" wide. This is both for strength and convenience.

A rough drawing is made to help the participant visualize what the end product will look like. As the picture is being drawn and measurements filled in, the participant is shown the proportions with a tape measure.

In Traveling Teacher Center workshops the bookcases are made a standard size so as to maximize the use of a limited amount of triwall.

MAKING IT

Tools Needed
- Table Saw
- T-Square
- Slotmarker
- Saber Saw
- Pencil
- Tape Measure
- Panel Saw
- 2 Spring Clamps

Materials
- Triwall
- Masking Tape (optional)
- Latex Paint (optional)

Aids to Fabrication

- model
- template
- • pre-cut pieces (for Traveling Teacher Center)
- posted instructions
- classroom use handout

"How long does it take to make this item?"

- 0-½ hour
- ½-1 hour
- • 1-2 hours
- 2+ hours

Process

Once the sketch is made, a list for pre-cutting is compiled.

First, the dimensions for the piece which is used for the back and sides is determined by adding the length of the bookcase back plus twice the shelf width (the sides). The height has already been determined in the planning stage.

Second, the number and size of the uprights are added to the list (width x height of bookcase - size upright).

Third, the number and length of the shelves are determined. Shelf size = width x bookcase back length +6".

The staffer cuts the back and side pieces to length on the panel saw, making sure grain runs from top to bottom.

The staffer shows the participants how to mark the locations of the shelves on the two ends with the T-Square.

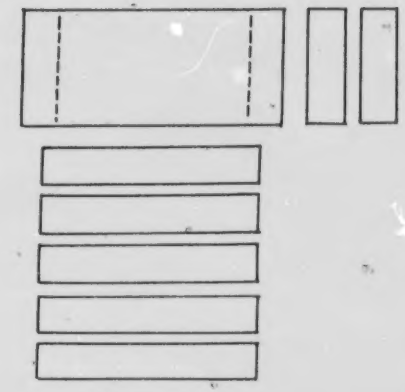
Put the cross piece of the T-Square tight against the bottom edge and put the pencil marks at 3", 3½", 24", 34½", 45" along the sides.

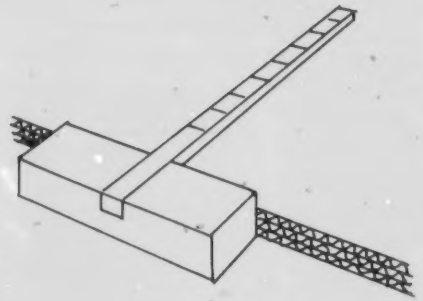
Staffer then instructs participants to mark the slots (see organizer).

Staffer then pre-cuts shelving and uprights on table saw for width and panel saw for length.

Staffer instructs participants to clamp an upright behind the marked edge and then cut the slots (see organizer for clamping and cutting instructions).

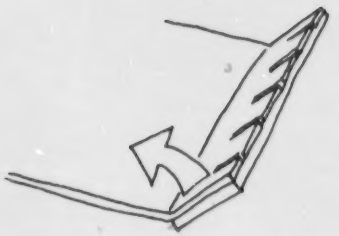
If there are more than two uprights, a cut one is used as a template to trace on to the uncut ones. Two uprights can be clamped together and cut.



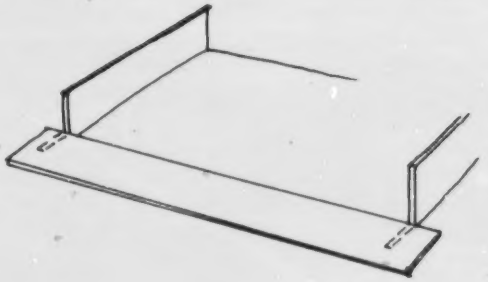


Staffer marks and draws a line parallel to and 12" in from the ends.

Staffer or participant creases the lines with a tape measure (see organizers).

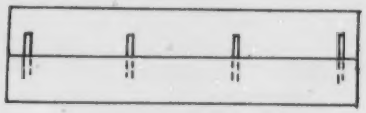


Both ends are folded over. This is done by placing one of the upright supports backwards under the end (notched side facing notched side before slipping the shelf under). Grasp both the shelf and the end with one hand, place the other hand firmly down the back. Then lift and bend the edge up and over flat against the back. The staffer and participants should do this together. The staffer explains this by placing his own hands first and having the participant follow his example or by positioning the participant's hand for him. Be sure to grasp the end at least 4"-6" in from the low edge or half way in if one person is folding.



Have participant hold ends straight up and down. Stand on opposite side of the table and center one of the shelves against the bottom edge of the back. There should be approximately 3" overhang on both ends of the shelf. Mark the position of the ends on the shelf as with the organizer.

Measure and mark the position of the uprights on the shelf. If 15" in from the edge of the back the mark should be 18" in from the edge of the shelf. Mark the slots with a slot marker.



Lay an unmarked shelf adjacent to the mark and transfer the marks. Then use the slot marker (see organizer).

Mark odd numbered shelves and clamp unmarked even numbered shelves behind the marked ones to cut.

To assemble, position back flat on a table, participant holds one side straight up and one upright in position with notches facing up. Staffer takes first shelf and lines up the notches from one end of the book shelf through the ensuring uprights to the other end. When all the notches are fitted, the shelf can be pushed down until it lays flat against the back.

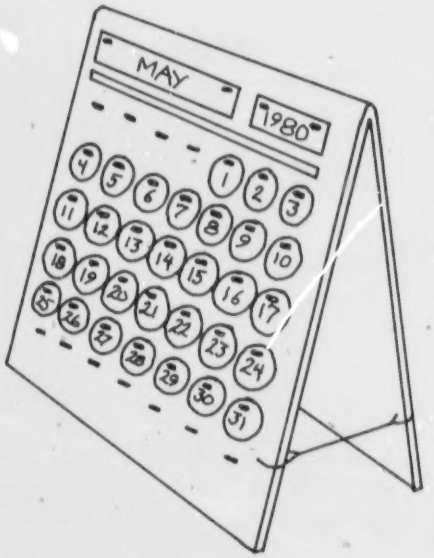
Taping the edges with 1½" masking tape and painting with latex paint gives bookcase a "professional" look and makes it last longer.

CREDITS

The Further Adventures of Cardboard Carpentry
Workshop for Learning Things, Inc.
5 Bridge Street
Watertown, Massachusetts 02172 1972

Narrative sections by Rich Bechtel.

CALENDAR



DESCRIPTION

This triwall calendar has interchangeable days, months, and years, which hang from pegs. It can be arranged for any month. It is made in two sizes. The larger 30" x 30" size is ideal for the classroom and large group activities. The smaller 14" x 14" model was designed to be more portable and easily used in the home or with small groups in the classroom.

The calendar is useful for teaching calendar related concepts such as days of the week, months of the year, and number sequence of days in the month. Special events such as holidays, birthdays, trips, and bake sales can be noted and marked with clear acetate pieces hung from the noted day.

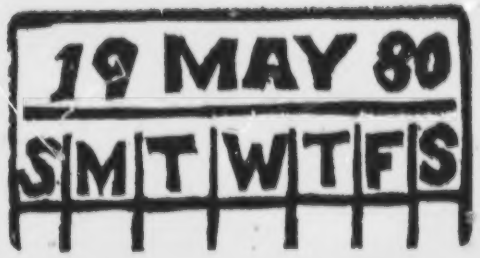
The elements can be easily changed by the children. This property of the calendar heightens its educational value. As the children handle and arrange the months, year and days of the calendar and learn to place them in appropriate places as a daily activity, their familiarity and ease with number concepts and time concepts are greatly reinforced on a concrete level. The months and years are written in dark magic marker on light colored posterboard pieces. These pieces are laminated and have one hole drilled in each end so that they easily hang on pegs.

Seven columns of pegs are arranged in six rows on a triwall base, so that there will be enough spaces to accommodate any month. The days of the week are written above the appropriate column of pegs for the days of the week.

The calendar may also be used to teach ordinal counting; vocabulary concepts, development such as beginning, middle, end, over, under, next to, before and after; counting by ones and tens; distinguishing shapes, colors, textures and multiples of seven.

OBSERVATIONS FROM TEACHERS AND PARENTS

"I used the calendar to show beginning, middle and end; over and under; next to; before and after; to count by ones and tens; and to distinguish shapes, color and texture. I literally tried to stretch the use of the calendar."



Age Appropriateness
- Pre-K
- K-3
- 4-6
- All Ages

Group Size
- Individual
- Small Group
- Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- No

"How did you decide to make today's item?"
- Your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- measuring
- cutting pieces
- using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"

- Days of the week and month
- Dates
- Count by ones, sevens, tens
- Over, under, next to
- Before and after
- Shapes, Color, Texture
- Ordinal counting (first, second...)
- Numeral recognition
- Number of days in month
- Number sequence of days
- What day is first?
- What's next?
- Put the numbers in correct order
- Find the day of the week given the date

PRESENTATION

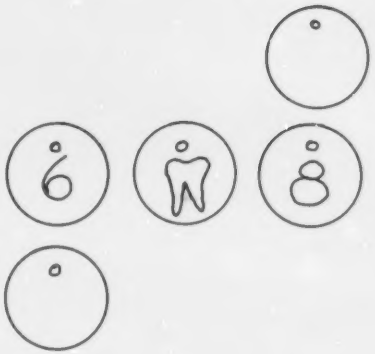
This item is displayed in the Teacher Center

- ● at all times
- for workshop only
- kept in labelled drawer
- sample in use
- on Travelling Teacher Center poster
- in Teacher Center Sampler
- in Teacher Center Photograph Book

When a staff member presents the calendar to a group of participants, it is helpful to determine the ages of their children. With a large group, this may be done by saying, "How many of you have pre-school children?" "How many have children from K-3?" etc. For a smaller group have each person in the group share the age(s) of their children and what they hope to get their children to learn from the use of a calendar. This procedure gets participants thinking about the needs of the children with whom they are working, and how a calendar could be used to meet these needs. The group is shown the display model of the calendar and a staff member explains how it is made. Places for displaying it in the home or the classroom are suggested. For example, "You could put this smaller calendar in the kitchen or similar counter space where it can be used at the same time each day--at breakfast or snack time."

Then the group is asked for some ways they would use this calendar. Keep a list of suggestions which might include keeping doctor and dentist appointments and marking special events such as trips, school meetings, holidays, and birthdays.

When presenting to teachers or parents it is helpful to ask them to reflect on the skills that can be learned with this item. These include counting,



number recognition and sequencing, vocabulary development, word recognition, seasons of the year, and concepts of time and planning.

After brainstorming with the group and listing all possible objectives we may follow-up by demonstrating and explaining an activity. For example, you might say "Have your children place the numbers in appropriate places under the days of the week in correct order. Have your children do this with you each day." Explain the importance of having the child verbalize what he is doing while handling the calendar parts.

Give examples of questions one might ask the children. "What day comes after Friday?" or "What day comes between Tuesday and Thursday?" or "What will the date be next Monday?" or "How many more weeks till your birthday?" We supply a hand-out with lists of suggested learning activities which can be done by the children with the parent or teacher.

DESIGN

The design for the calendar can be adjusted for its use and space available. The size of the two calendars (30" x 30") and (14" x 14") was largely determined by the size of the discs at hand. We have 1½" and 3" discs available. But if one is cutting posterboard pieces to be used in place of discs, the calendar can be any size to accommodate space in the room and size of the group. The smaller calendar was designed primarily for our Traveling Teacher Center, where many parents request a home-size calendar. The basic design for the calendar can be amended by adding an easel back of triwall, to help keep it from falling over. Some participants made acetate pieces of the same size as their discs with holes punched in the top center. These acetate pieces may be colored or written on with permanent magic marker, and hung over the numbered discs to mark special events. Other teachers often place the colored pegs in color patterns, i.e., all Sundays in yellow or first week in red. This aids in teaching color, pattern, and placement. Another option is to laminate the posterboard strips so that they last longer. In this case the laminating is done after the months and years are written and before the holes are drilled on the ends.

MAKING IT

Materials

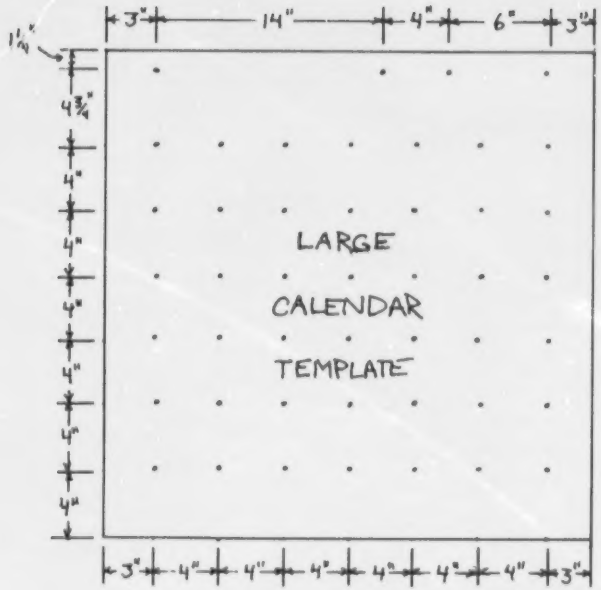
Small Calendar
- (1) 14" x 14" Triwall
- (23) 2" Long, colored, wooden, pre-school pegs, cut in half
- White glue
- ¼" Posterboard strips
- Markers
- Rubber Cement
- (50) 1½" Discs

Large Calendar
- (1) 30" x 30" Triwall
- (46) 2" Long ¼" dowel pegs
- White glue
- Masking tape
- Posterboard
- Markers
- Rubber Cement
- (50) 3" Discs

Tools

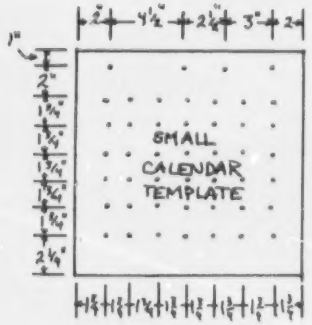
Small Calendar
- Saw
- Template
- Spring clamps
- Awl
- Peg-cutting jig
- Hammer
- Drill press, ¼" bit
- Disc-drilling jig
- Hand screws (clamps)

Large Calendar
- Saw
- Template
- Spring clamps
- Awl
- Hammer
- Drill press, 5/16" bit
- Disc-drilling jig
- Hand screws (clamps)



Aids to Fabrication
- model
- template
- pre-cut pieces
  posted instructions
- classroom use handout

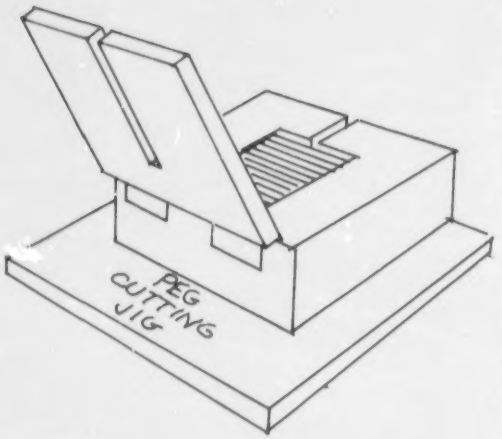
"How long does it take to make this item?"
- 0-½ hour
- ½-1 hour
- 1-2 hours
- 2+ hours



Small Calendar

Staff person cuts (or has pre-cut) a 14" x 14" piece of tri-wall on the table or panel saw. "This is what you need to start your calendar." The participant spring clamps the template to the tri-wall and pokes holes in the tri-wall with the awl through every hole in the template. "Pokes holes one row at a time so as not to miss any." Participants cut 23 colored pegs in half--yielding 46 half pegs. Sometimes these are pre-cut in quantity in preparation

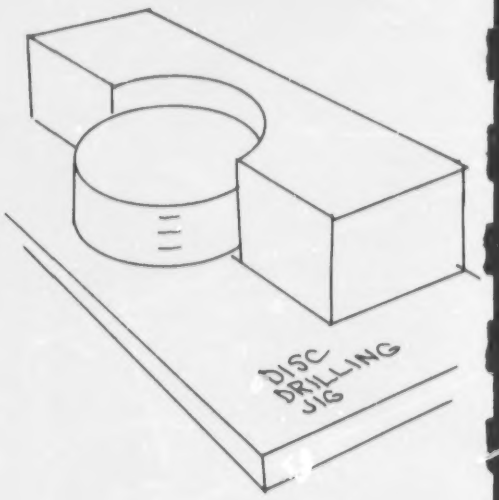
for a workshop where many calendars have been requested beforehand. We have designed a jig that cuts 100 pegs at one time, safely and relatively efficiently.



At this point we learned that it is best to write the names of the days of the week on a colored strip of posterboard ½" x 1/3". Placing the strip just above (¼") the second row of holes, (the top row being the row with just four holes) and centering the names so that they fit over each column of holes. This may be written in pencil first and then in black magic marker, after all centering has been layed out. This strip is then glued down in place with rubber cement just ¼ inch above the second row of holes.

One thing we've learned by having people make their own calendars is what problems to avoid. We have found that after the participant has punched all the holes in the tri-wall with a template and an awl, the next step should be the writing and glueing down of the names of the days of the week. These names are glued down under the first row of four holes and just above the second row of holes which are the seven holes for the first week. This should be done before the glueing in of the pegs since the pegs would get in the way of writing the names in the proper places. Also, planning out the space needed to write the days' names, over the appropriate pegs, required much forethought and at times re-doing. The days' names should be written on a 13" x ½" posterboard strip, first in pencil and then after the names are all centered, in magic marker. This strip is then rubber-cemented in place, ¼" above the second row of holes.

The 46 holes need to be widened slightly at their mouth by the awl. This is done by placing the awl back in each hole and rotating it around a wider diameter thus widening the mouth of each hole. This is done so that the colored pegs can be hammered in without cracking the tri-wall surface. Participant puts a dollop of white glue in several of the awl-widened holes, then hammers half pegs into each hole. "Put a drop of glue in each hole. Do a row at a time. Then hammer in your half pegs into each hole. Hammer till you hear the sound change when the peg hits the table."



Holes are drilled in month pieces, year pieces and date discs. The participant is ready to write the month and the year (this year and three to follow) on posterboard pieces, and the numbers 1-31 on the discs. The participant hangs the month strips on the first two pegs in upper left-hand corner, the year strips on the two pegs in upper right-hand corner and the 31 discs in their proper places on the pegs of their calendar. The calendar is completed and ready to use each day.

Large Calendar

Staff person cuts 30" x 30" piece of triwall on panel saw. "Here, let me cut this piece out, and then you can go to work!"

Participant spring clamps template to triwall, and pokes holes with awl. (The template has holes for months and years, plus six or seven holes to accomodate every possible month.)

Staff member or participant cuts 46 2" long pieces of ¼" dowel. I prefer to cut these because the dowels tend to jump around when they are cut on the band saw.

Participant sharpens slight points on dowels.

Participant puts a dab of white glue in several of the awl-poked holes, then hammers in dowels. "Hold them straight up. Hit them until you can hear the sound change, as the dowels hit the table." (We used to have the awl holes poked on an angle, and the pegs put in the same way. However, some people had trouble with the pegs going every which way, and with dates falling off.)

Participant selects discs for dates. "You will probably want to take 50 to allow for special days, lost numbers, and so on."

Participant drills holes (at least 5/16" diameter) in discs, after staff person clamps hole drilling jig to drill press table. The jig is aligned so that the hole is about ½" from the edge of the disc. The faster the RPMs of the drill, the cleaner the holes will be.

Participant can cover the edges of the calendar with tape.

Posterboard cards for the months and years can be cut on paper cutter. "If you use both sides you can store them all easily on the calendar itself." Holes in these cards can be marked from finished calendar and drilled on drill press.

MAINTENANCE

Two participants noted that pegs fell out of their calendars when they were knocked over.

It would be helpful therefore to mention to participants that they can be re-inserted and glued with white glue.

This also reinforces the need to offer the easel back option in situations where stability is an issue.

CREDITS

Narrative sections by Josie Viviani.

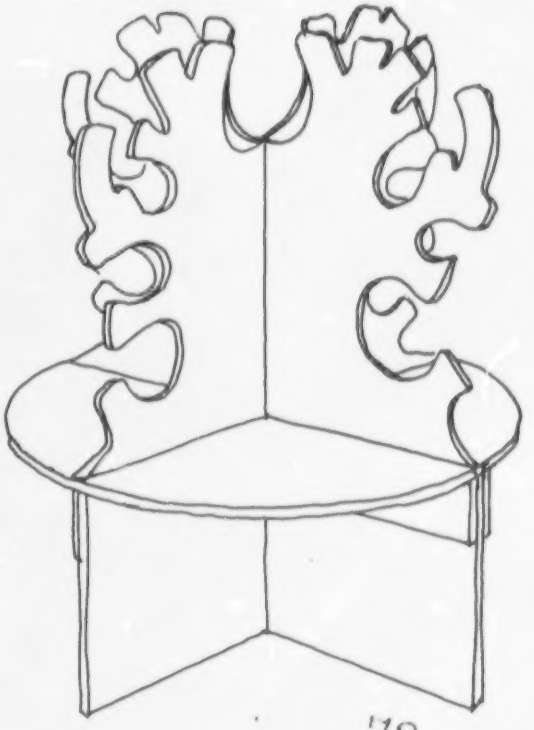
CARREL

DESCRIPTION

The carrel is a study area for small groups of children. It can be used as a learning center for a particular subject, a private place to work, a protected spot for testing or pursuing independent activities. It can be used to separate students. Carrels can be made to sit on an existing table top or they can be constructed with a built-in table. Different sizes and table heights are available. The table top separations can be used for display.

OBSERVATIONS FROM TEACHERS AND PARENTS

"One of the greatest innovations I have added to my classroom!"



Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- Individual
- • Small Group
- Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- • Classroom furnishings

Maker Characteristics
- • Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- No

"How did you decide to make today's item?"
- your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

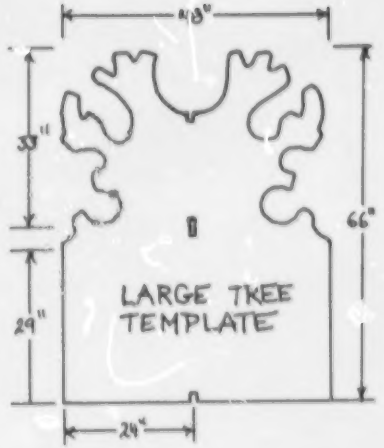
"How did the staff help in the creation of your item?"
- designing
- measuring
- cutting pieces
- using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

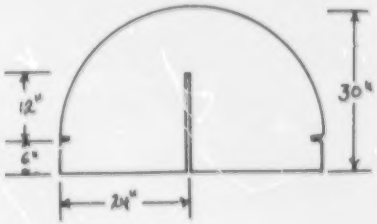
"How did you use this item in your classroom?"
- As a private place to work and take tests
- To set up learning centers

Comments

"The children were able to do activities by themselves without outside interference."

"More built-in shelf storage would be a useful improvement."





PRESENTATION

This item is displayed in the Teacher Center
- at all times
- for workshops only
- kept in labelled drawer
- sample in use
- on Traveling Teacher Center Poster
- in Teacher Center Sampler
- in Teacher Center Photograph Book

Most people come into the shop having decided to make a carrel. Often they identify the "Tree in the other room" as what they want to make. The branches are good for hanging learning center displays, and the item makes a big impact on the visual character of a classroom.

DESIGN

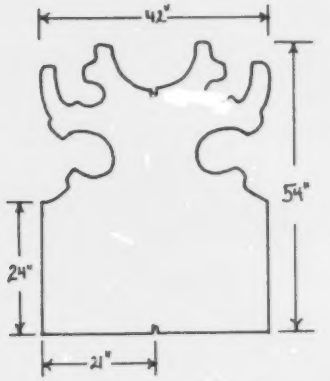
"We have two sizes of trees. Is there one you prefer?" I show them the templates.

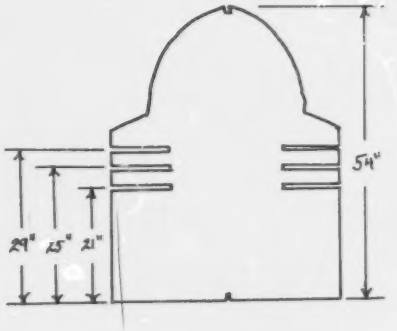
The participant often asks, "But how am I going to get it home?" I assure them that if they can't get it inside, I will help them tie it on top of their car. Often they consider this and ask if they could pick it up with a larger vehicle at a later date.

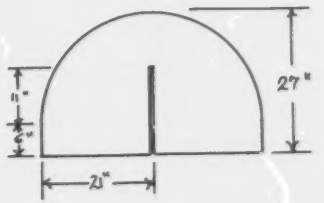
If they express interest in a smaller size I show them the Owl, Enchanted Castle, Rocket Ship, and the Ice Cream Sundae. One evening a woman made 6 separate carrels, enough for every child. (She had a friend with her to help with construction.)

The only other major design decision to be made is table height. Several of the templates have slots out at different heights. These slots are labelled by age groups, and reflect the different seat heights that are used by different size children. It is good to point this out because occasionally teachers will be working with pre-school children and adult-seated chairs.

SMALL CARREL TEMPLATES







MAKING IT

Materials
- (2) 4 x 8 Triwall or (3) 42" x 54" Triwall
- (2) 2" x ¼" PH Stove Bolts
- (2) ¼" Nuts
- (4) ¼" Washers

Tools
- Template
- Pencil
- Saber Saw
- Clamps
- 4' Square
- Awl

Aids to Fabrication
- model
- ● template
- pre-cut pieces
- posted instructions
- classroom use handout

How long does it take to make this item?
- 0-½ hour
- ½-1 hour
- ● 1-2 hours
- 2+ hours

81

82

Large Tree Templates for the tree and the table top are laid on top of two stacked sheets of 4' x 8' triwall and traced. If you line up the three straight edges of the tree template with the edges of the triwall you will not have to cut these lines. In the same way, it saves work to lay the straight edge of the tabletop pattern along the edge of the cardboard. These two patterns were designed to make the most efficient use of the material.

Small carrels - Lay the template on two sheets of 3½' x 4½' triwall and trace. The smaller tabletop pattern has to be traced twice on a third separate sheet of triwall. Again, it saves work to line up straight edges of the template with straight edges of the cardboard.

Table Size Carrels - Remove templates. Spring clamp triwall sheets together. Cut with saber saw. Often we place a heavy weight box on the triwall to hold it steady.

Saber Saw - Introduction

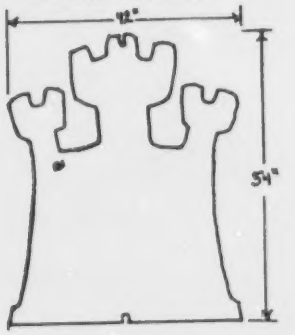
While participant is tracing the template I get them a saber saw, unwrap the cord, and plug it into one of the hanging outlets over the work table. I say, "Have you used these before? Off you go!" or, "This is called a saber saw. It turns on and off with this trigger." (I turn it on and off with trigger mechanism visible to participant.) "You operate it by sitting this plate on top of the cardboard. (Demonstrate) It is a good idea to keep a little weight on the saw, like an iron, to keep it from jumping up and down. (I run it for a little ways and stop.) It doesn't go anywhere unless you push it. I know it sounds like its going a million miles an hour. (I demonstrate by turning it on and showing that it does not go anywhere by itself.) You can go around any corner as long as you keep the saw running. Okay, why don't you give it a try!" I generally watch the participant for a moment to be sure they and the tool are operating harmoniously. As soon as I sense they are in control, I leave. This is, for me at any rate, a clear body-language statement that they are on their own, and know all they need to know about operating the tool.

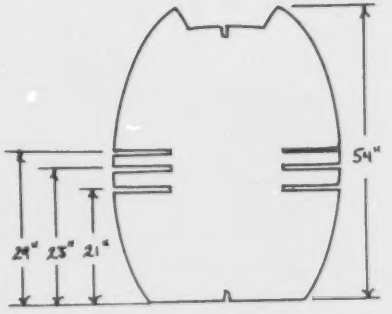
After the carrel shapes and the two tabletops are cut out, I draw the slots for interlocking the two carrel pieces.

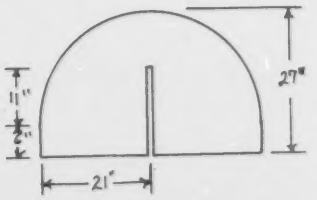
One carrel piece has 3 slots drawn on it: two horizontal slots for the table and one central vertical slot running from the top to the middle.

On the large carrel the vertical slots are 33" long by ½" wide. The horizontal slots are 12" long by ½" wide.

MORE SMALL CARREL TEMPLATES







On the small carrel, the vertical slots are 27" long by ½" wide. The horizontal slots are 11" long by ½" wide. I use a 4' long T-square (a masonry tool) to make the slots. The templates provide indicator marks for drawing these slots.

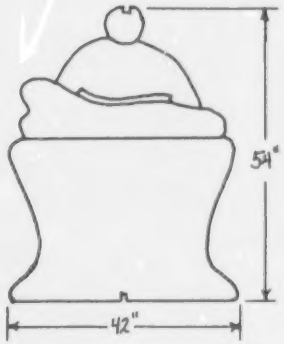
These slots are cut with the pieces separated. (Rich and Fred draw the vertical slot from the bottom of one sheet and then clamp the two sheets together, oriented in opposite directions, so that these two slots can be cut together. Table slots must be cut separately because they only go as one piece.)

While the participant is cutting these slots I bend the table top pieces along a line six inches from the straight edge. It is easiest to identify first the side of the triwall on which the corrugations are most visible. I then score down one "flute" with the corner of my tape measure. By pushing down on the cardboard with my left; and grunting loudly I can hold the triwall back flat on itself. It then springs back to approximately a right angle.

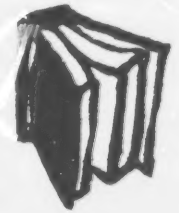
"There is only one more thing to do. Well actually there are a couple of things. I will show you how to put this together. First we slide these two big pieces together. (This takes two people.) Then we slide the table pieces in from the side. (The fold faces down.) I align the table top, and spring clamp it in position. I poke an awl through all three layers of triwall (one carrel piece and two table folds.) Repeat the same thing on the other side. I then get out the nuts, bolts, and washers and demonstrate how they are installed, with a washer on each side of the triwall.

Then I help take the carrel apart. "Do you want to paint it?"

ONE MORE SMALL CARREL TEMPLATE



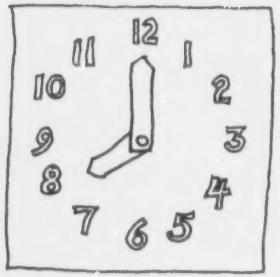
CREDITS

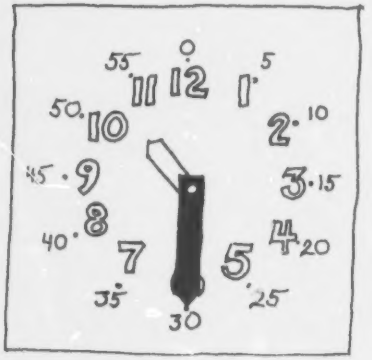


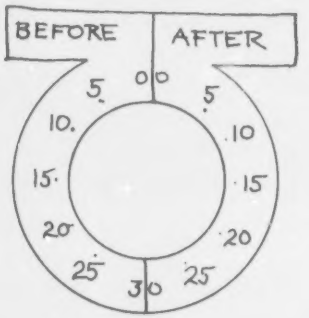
Cardboard Carpentry, Drawing and Sketches
Educational Development Center
Newton, Massachusetts 02160

Narrative sections by Sandy Caesar.

CLOCKS







DESCRIPTION

Several varieties of clocks are made frequently. The simplest is a clockface with moveable hands useful for reinforcing the recognition of numerals (ordinary or Roman); telling time by the hour, half hour, quarter hour, etc. A teacher may use it for demonstration, stand it on a ledge for all to see, or give it to children to set the hands at a particular time such as breakfast time, now, recess time, or what the clock will look like at dismissal time.

A more elaborate version has minutes written outside the clock face (5, 10, 15, . . .) in a color matching the color of the long hand. The hour numerals match the color of the short hand. Using designations from 5 to 55, one can use the color to illuminate notations such as 7:40. The BEFORE-AFTER clock shows 5, 10, 15, 20, 25, 30 both to the right and to the left. The word "BEFORE" or "OF" is written in the upper left corner and "AFTER" in the upper right. Children can read the outside numeral where the long hand is, then the word on that side, then the inside numeral to which the short hand points e.g. "25 after 4" or "10 before 8."

An especially popular version of this is a collar to be mounted around the classroom wall clock showing minutes and the words "BEFORE" and "AFTER." By following the rule outside (long hand) - word - inside (short hand) a child can always tell the time.

In addition to time-telling the clocks have been used to teach concepts--before and after, clockwise and counter-clockwise, counting by fives, multiplication by 5, addition, subtraction and fractions.

Time-telling is a natural thing to learn at home. Parents seem to feel more at ease with the responsibility of teaching it when they have a teaching device they know can do some of the explaining.

These clocks were developed by Sandy Carter, a parent and Elizabeth Vella, a teacher, in response to their own children's needs.

OBSERVATIONS FROM TEACHERS AND PARENTS

"I think my (before and after) clock will be around school for a long time. It is very effective."

Age Appropriateness
- Pre-K
- ● K-3
- ● 4-6
- All Ages

Group Size
- ● Individual
- ● Small Group
- ● Large Group

Suggested Classroom Use
- ● Language Arts
- ● Mathematics
- ● Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- Teacher
- ● Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- ● Yes
- ● No

"How did you decide to make today's item?"
- your own idea
- ● display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?
- designing
- measuring
- ● cutting pieces
- ● using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"

- Telling Time
- Writing Time
- Roman Numerals
- Counting to 12
- Number Recognition
- Fractions
- Counting by 5s
- Time related to daily activities

Comments

"It's a good visual aid in teaching non-English-speaking children to tell time."

(It would be helpful . . .) "if one could make smaller clocks for individual use."

"I would recommend the (before and after) clock to any parent aide, it's the best way to teach time."

PRESENTATION

This item is displayed in the Teacher Center

- at all times
  - for workshops only
  - kept in labelled drawer
- sample in use

on traveling Teacher Center Poster
in Teacher Center Sampler
in Teacher Center Photograph Book

Most people have seen a model and want to reproduce it. I point out the other models, or characteristics of the one they have noticed. "This one has hands colored to match the numerals inside and outside. It gives a child one foolproof way of telling time. All he has to do is read the red numeral at the end of the red hand, then the word on that side, then the blue numeral at the end of the blue hand. The child has to be familiar only with the direction the hands travel in order to know what to say when the blue hand is between numbers." I set the clock and we do a few examples. I try to emphasize the color coordination because so many people ignore this in using and making the clock. "Of course it doesn't automatically teach a child all the ways of telling time - half past three, 2:45, etc." I want parents and teachers to think about the clock model as only one way of teaching time, not as something which will do the whole job.

"And did you see the one on the wall around the real clock? It's just the same except that the hands and numbers aren't colored. You read the outside numbers with long hand . . . I'm saying 'long' and 'short' instead of 'big' and 'little' because that clock has a wide short hand and a thin long hand so 'big' and 'little' are confusing."

We talk about which version would best suit the participant's purpose, style and children. Sometimes a modification is made.

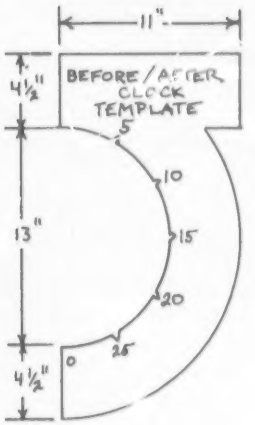
We have a ditto handout sheet summarizing these instructions.

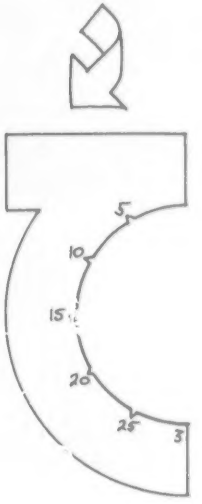
My approach is much the same with a group except that I demonstrate with a clock model as I talk.

DESIGN

There are templates for the clocks, which most participants use. For the BEFORE-AFTER clock with moveable hands, I usually show the participant the pre-cut hands. "Here are some hands you can use. If you want different colors, of course, you can cut your own, but don't forget to change the colors of the numbers to correspond."

If the participant is making a collar we discuss the possibility of making the right and left sides different colors in order to emphasize the distinction between before and after. We also discuss the shape of the clock in his classroom to see whether either of our templates can be used. If not, the participant may want to call the school to have someone measure his clock.





MAKING IT

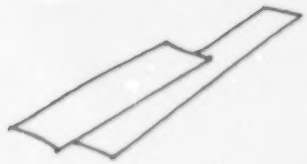
Materials
Clocks with moveable hands:
Posterboard
Markers (wide and fine)
Lamin
Paper Fastener

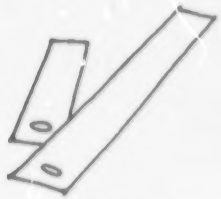
Tools
Scissors
1/8" hole punch
Laminating machine

Collar:
Posterboard
Lamin
Wide Markers

Aids to Fabrication
model
• template
• pre-cut pieces
posted instructions
• classroom use handout

How long does it take to make this item?
• 0-½ hour
½-1 hour
1-2 hours
2+ hours





Clock with moveable hands

I supply the poster board and pre-cut hands, make sure the participant has the template and other equipment or knows where to find them, and tell him that before he attaches the hands we can laminate the clockface. I point out that the template has holes for marking the center and the positions of numerals and watch to see that one of the holes is at the top as the participant begins to write numerals to see that the colors are coordinated with the hands (if necessary) and that the numerals are written vertically. If I see a participant beginning to turn the clockface in order to write, I say "You really don't have to go to all that trouble. The real clock up there has all the numerals written right-side up."

The participant laminates the face, then punches a hole in one end of each hand and snips the other to a point. I say "If you make a little hole in the center of the face with the scissors' point, the paper fastener will go through more easily."

The participant attaches the hands with the fastener and holds the clock at arm's length to admire it.

Collar

I give the participant a piece of posterboard and show him how to place the template at each end so as to minimize the cutting and save posterboard.

The participant traces the collar and writes the numerals and words. I suggest laminating to prevent fading, and doing this before cutting.

We discuss how to get the custodian interested in helping to mount it.

CREDITS

Before and After Clocks of various styles were developed by Sandy Carter and Elizabeth Vella of the Learning Centers Project.

Narrative sections written by Julie King.

COLOR WORDS

DESCRIPTION

"Color Words" are color names, written in linked, block letters, on appropriately colored paper. For example, the color "red" would be written on red paper. If a teacher has a collection of the color words, then he/she can display them on bulletin boards. Because of their size and colorful nature they can be seen by both small and large groups of children throughout most any room.

Teachers and parents have enthusiastically reported on the effective use of this instructional aid in helping children learn the primary color names as well as to learn to spell them. One teacher noted that this item had "possibilities far beyond her original idea." She used the color words to teach plurals and nouns. Besides the uses mentioned, teachers have reported that they used the color words to teach letter formation and alphabet activities. One teacher suggested that a "mini" set be made so that children could hold them in their hands and match them to duplicates.

OBSERVATIONS FROM TEACHERS AND PARENTS

"This is a terrific item; the children could see it, spell the word, and relax. I think being able to enjoy a lesson helps the children to remember."

Age Appropriateness

- Pre-K
- K-3
- 4-6
- All Ages

Group Size

- Individual
- Small Group
- Large Group

Suggested Classroom Use

- Language Arts
  Mathematics
  Multi-purpose learning aid
  Classroom furnishings

Maker Characteristics

  Teacher
- Aide
  Parent

"Had you planned to make this item before you came to the Center?"

  Yes
- No

"How did you decide to make today's item?"

  your own idea
- display
  introduced by staff
  suggestion of co-worker
  other

"How did the staff help in the creation of your item?"

  designing
  measuring
- cutting pieces
- using tools
  finding references
  cheerleading
  someone helped me
- I did it all myself!

"What topic was taught with this item?"

- Color recognition
- Sounds
- Alphabet
- Phonics
- Spelling
- Letter formation
- Initial consonants

Comments

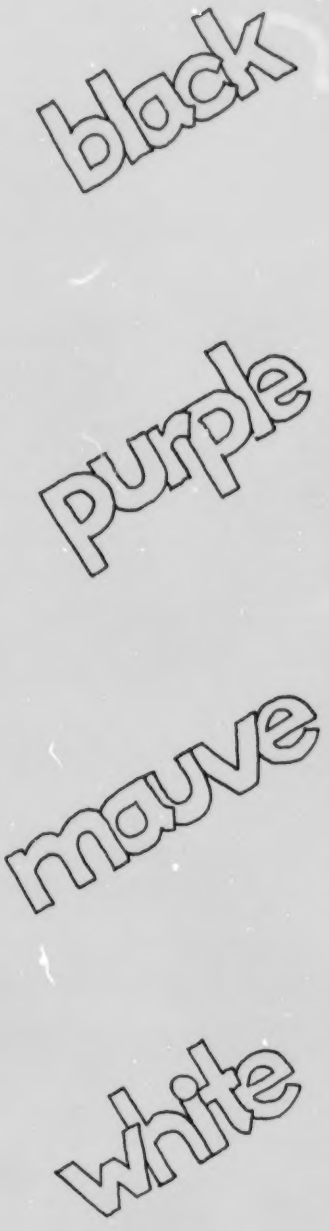
"Was easy to make. Teacher was pleased."

"I found the material very useful in helping children distinguish colors."

"The color words were very helpful in teaching the children their primary colors. The color words also taught the children how to spell the colors."

"This item is very effective in teaching first graders to spell the names for colors."

"Reduce to a smaller set so that children may use it with manipulatives."



PRESENTATION

This item is displayed in the Teacher Center

- at all times
  for workshops only
  kept in labelled drawer
  sample in use

on Travelling Teacher Center Poster
in Teacher Center Sampler
in Teacher Center Photograph Book

Rarely do we introduce "color words" to individuals or groups. They are displayed quietly on the side of a shelf that faces the participants who are attending a workshop. It is always astounding to me that, at the conclusion of a workshop on a topic entirely unrelated to color, where many easy-to-make, teacher-made items are shown, many teachers will ask to make "color words." They are an instant-success product with direct application to student learning.

MAKING IT

Materials
5" x 18" Oaktag or
5" x 18" Posterboard in many colors

Tools
Pencil
Scissors
Magic Markers

Aids to Fabrication
- model
- templates
  pre-cut pieces
  posted instructions
  classroom use handout

Time to Make It
  0-½ hour
- ½-1 hour
  1-2 hours
  2+ hours

Because the color word templates exist, participants only need appropriate colors of posterboard of colorful magic markers and oak tag, and then scissors to complete their project. "Trace, fill in the inside lines, and then cut," are the directions I give. "Note that you do not need to cut out any of the inside pieces of the letters of e, d, g." This one point adds to the ease of making color words and reduces the time it takes to cut out the letters.

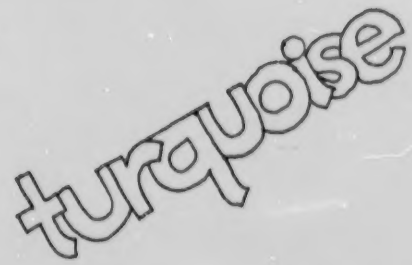
Color words can be made from other materials such as colored corrugated paper, contact paper, and fabric.

MAINTENANCE

These materials last well, in part because teachers tend to hang them on the wall, out of children's reach.

CREDITS

Narrative sections by Penny Allison.

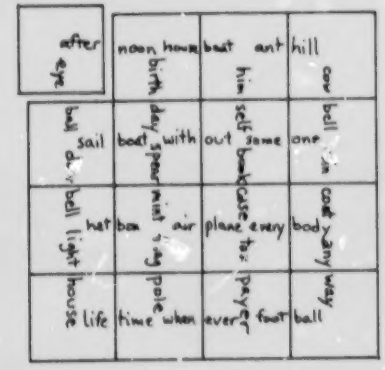


COMPOUND WORD MATCH

DESCRIPTION

Compound words are natural puzzles and kids love puzzles. These three compound word activities capitalize on this fact, they differ only in the actual task. In the first instance a compound word is written onto a disc and then the disk is cut apart in a jig saw manner which separates the compound word into its two elements. This style of two piece puzzle is a self-correcting teaching aid suitable either for small-group activity or individual. The shape of the puzzle pieces are visual clues for the learners. The student(s) can keep a record of how many compound words they "make" within a certain time limit. There can be a class list of compound words that is increased as students "discover" new ones after they have become thoroughly familiar with those contained in the Compound Match Activity.

The second puzzle format is an 11 inch square cut up into 16 small squares. In this format only the individual words serve as clues since the cut lines are identical. Actually, the border squares serve as visual clues; the outside edge has no words because there are none to combine with to form a compound word. This activity is a reinforcement of compound words already introduced and like the first activity is suitable for individual or small group participation. Children are usually required to record in their spelling books or on a piece of paper all the compound words they make with the activity. Some teachers also require their students to write the compound word in a sentence.



The third activity centers on pairs of pictures. These pictures may be presented in pairs or given in bunches to students who then try to "make" pairs. In either way the compound word is recorded by the players. The pre-arranged pairing is one way to present the concept of a compound word to students. Once this is understood the large collection of individual pictures becomes a treasure for compound word "discoveries." The selection of pictures or from old workbooks (eraser stamp images) includes both obvious items such as net, ball, bird and some more ambiguous ones like ladder, branch, animal, etc. Thus, as students work with these images they begin to learn about ways to

expand their vocabulary by moving from specific words arising from the literal reading of the pictures to a broader, richer vocabulary; one which gives them more power with the expression of their ideas. Finally, this activity gives some insight into how words are made.

OBSERVATIONS FROM TEACHERS AND PARENTS

Age Appropriateness
- Pre-K
- ● K-3
- 4-6
- All Ages

Group Size
- Individual
- ● Small Group
- Large Group

Suggested Classroom Use
- ● Language Arts
- Mathematics
- Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- Teacher
- ● Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- ● No

"How did you decide to make today's item?"
- your own idea
- ● display
- ● introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- measuring
- ● cutting pieces
- ● using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"
- Compound Words
- Phonics
- Reading
- English/Spelling
- Language Arts

Comments

"My children enjoyed it!"

"Very effective in reading, spelling and learning new words. Thank you for this great game."

"Children enjoy competition in forming compound words."

"The children enjoyed working with the game. I also used the same type of game with multiplication facts."

PRESENTATION

This item is displayed in the Teacher Center

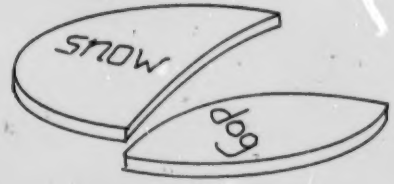
- at all times
- for workshops only
- kept in labelled drawer
- sample in use

- on Traveling Teacher Center Poster
- in Teacher Center Sampler
- in Teacher Center Photograph Book

Compound Words . . . Two Piece Puzzle

'Here's a collection of two-piece puzzles. Let's see how many we can put together

(Scatter the pieces face up on a table and pause)
"Oh, good, here's dog. Where's something that will go with it?
"DOGHOUSE. Fine, now let's look for another, or better, yet, try for three more.
"CATFISH, SNOWMAN, HOTDOG
"Okay, you've got the idea . . . see if you can get them all in the next five minutes!"



Compound Words . . . 4 x 4 Square Puzzle

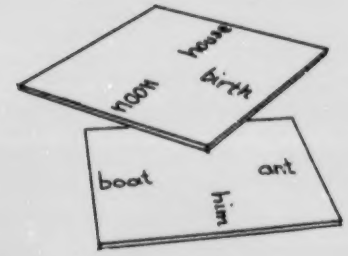
This puzzle becomes a square 4 pieces wide and 4 pieces long. Compound words are the key to the solution to what piece fits where.

"Here, help spread all these (pieces) out so we can read the words on the edges. Now let's see if we can make compound words. There's CARD and here's TABLE. That's a compound word, but we have to see what matches up with the other words before we know whether that is the compound word that makes this puzzle fit together.

"Let's look for some other match-ups . . . (pause). HOUSEBOAT . . . CLOTHESPIN . . . etc.

"Now, how many of these match-ups help us get the square together? HOUSEBOAT doesn't work here. Any other choices for that? SAILBOAT Good, maybe that works . . . let's find some more connections.

"If people need some further clues to proceed I ask, Do all the squares have four words on them?
No, some have 3 and others have only 2.
Does this tell us anything helpful?
Maybe the edges without words are the outside.
Okay, check that out . . . Is that helpful?
Keep going and let me know if there's a problem."



Compound Words . . . Eraser Stamp Prints

"Look at the pairs of pictures and give me the compound word. Can you think of some additional ones that we might add to our collection?

"Here's a collection of pictures which we're going to put in pairs to make compound words. But, first, each person draw 10 pictures at random from the pile and log them out in front of you. Does anyone see a compound word?

"What's this picture? (pointing to one which has both some stars and a crescent moon)

"Well, any ideas?
"Stars and Moon?

"Remember each picture represents one word."
"Night."
"Fine, and can you combine it with another word to form a compound word?
"NIGHTGOWN - NIGHTLIGHT - NIGHTSTICK"
"Okay, now each person or team of players form as many compound words as you have time for. As you use up your collection of 10 pictures draw additional ones from the counter pile to keep your supply near 10. If you get stuck with apparently "useless" pictures see whether you can trade with one of the other teams in order to get something you can use.

(5-8 minutes later) "Let's read off our compound words. Listen carefully for duplicates, variations, and 'No-No's'!"

★ MAKING IT

Materials
Discs
Posterboard
Lamin

Tools
Eraser stamps
Fine and Broad Line Markers
Ruler
Templates
Dremel saw or Band saw

Aids to Fabrication
model
• template
• pre-cut pieces
posted instructions
• classroom use handout

How long does it take to make this item?
0-½ hour
• ½-1 hour
1-2 hours
2+ hours

Two-Piece Puzzles

"Look over the list of compound words and select those which are appropriate to your students. Each word is then written on a disc with a fine tip permanent marker.

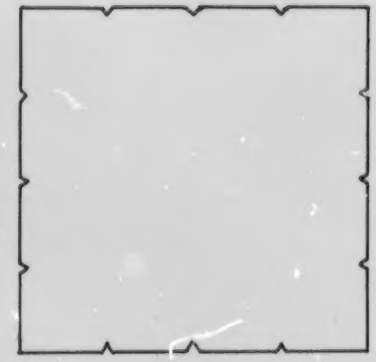
"The jigsaw puzzle aspect comes next, over in the shop. This saw operates much like a new sewing machine; you move material through the blade in a steady manner always sliding the material away from you. Here are several discs that we can practice on.

"I look at the compound word as if it were stretched between the 3 and 9 on a clock face. I can begin cutting anywhere between the 2 and 10 and move in wavy line towards space between the two words which make the compound word. Once I've separated the two words I can finish up anywhere . . . simply keeping some kind of wavy line going.

"Here, try it and remember that I kept my fingers on the edge of the disc. On this first one just concentrate on getting the feel of the material as it moves through the blade. To get the irregular line push more with one hand and then the other. Okay, that's good. Now, on these next two give more attention to starting at a different point on the edge of the disc and getting a more continuous motion to the cut. That's much better . . . I think you've got the feel of it . . . just keep working through your stack of discs."

Compound Words 4 x 4 Square Puzzle

"Lay the notched template over the pre-cut 11" x 11" piece of posterboard. Mark the notches and connect the marks horizontally and vertically with a broad-tipped marker.



"Now with a fine-tipped marker start writing your compound words across the posterboard, making sure the vertical lines divide the words into their component parts.

"Next rotate the posterboard 90° and write compound words across this way too.

"Laminate the posterboard, cut with a paper cutter and store in a zip-lock bag."

An instant list of compound words: cowboy, raincoat, anyway, himself, bookcase, taxpayer, birthday, peppermint, flagpole, eyeball, doorbell, lighthouse, afternoon, houseboat, anthill, sailboat, without, someone, hatbox, airplane, everybody, lifetime, whenever, toothbrush.

Compound Words - Eraser Stamps

"Rule off a piece of posterboard to make about 30 cards approximately 1¼" x 2" (or large enough to accomodate the prints of your eraser stamps). We have a template for this purpose. Go over your grid of lines with a broad-tipped marker.

"Print three cards with each stamp.

"Laminate the posterboard and then cut into cards with a paper cutter. Store the cards in a zip-lock bag."

Possible stamp images: house, girl, moose, grapes, snow, lips, lightbulb, ring, sun, bike, bird, ear of corn, fish, candle, cat, tree, star, nail, flower, fruit, shoe, star and moon, key, dog, boat, horn, net, cow, ladder, branch, ball of yarn, cheese.

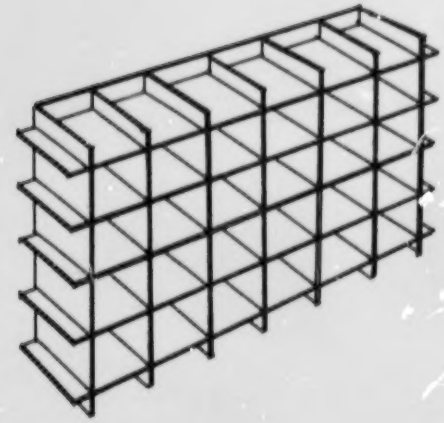
CREDITS

The 4 x 4 Square Puzzle appears in the October 1972 issue of The Arithmetic Teacher on page 465.

Narrative sections by Fred Locke.

CUBBY

DESCRIPTION



The "Cubby" is a furniture item with many small storage spaces into which classroom related items can be filed where they are easily accessible for adult or child & retrievable by the adults or the children in the room. It ordinarily stands on the floor and is four feet tall with the cubby holes in rows and columns across the front. Design adaptations can shorten it to fit under a chalkboard or on top of another piece of furniture. It can be adapted to hold standard size paper and books or it can be designed to hold shoeboxes or other uniform size totetrays for each student or use. The cubby hole spaces can be made as tall or as short as necessary and as wide or narrow as necessary. The depth is similarly controllable.

In addition to the flexible storage design that this structure offers, it is an ideal room divider and posting surface, for the back of the unit will accept thumbtacks and staples for the attachment of student work or other materials.

Examples of items stored in cubbies include (but aren't limited to)

- magazines, crayons, workbooks, art supplies, homework, worksheets
- returned student's work with the cubby acting as a mailbox
- student's personal items, clothes, blankets, copybook, tote trays
- sets of folders and work from each reading or other special group

Separate use areas in the cubby can be color-coded during the final decorating process.

OBSERVATIONS FROM TEACHERS AND PARENTS

Age Appropriateness
- Pre-K
- K-3
- 4-6
- ● All Ages

Group Size
- Individual
- ● Small Group
- ● Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- ● Classroom furnishings

Maker Characteristics
- ● Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- ● Yes
- No

"How did you decide to make today's item?"
- ● your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- ● designing
- ● measuring
- ● cutting pieces
- ● using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"How did you use this item in your classroom?"
- Storage of each child's materials
- Mailbox
- Reading materials storage
- Storage of children's worksheets
- Storage of children's clothes

Comments

"(Children) learned to recognize their name on tags attached to their individual cubby. (Children) learned to place paper and toys in their proper place after use."

"Items were accessible and organized and off tables therefore we had more floor and table space to work and spread out."

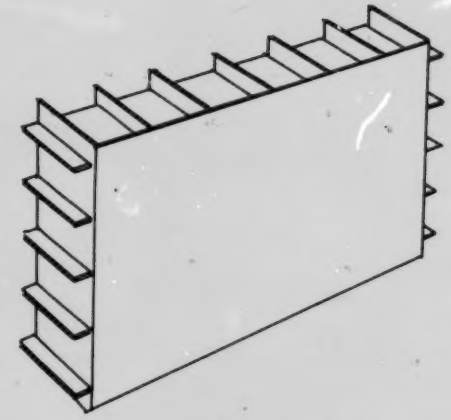
"The color-coded cubby shelves are extremely helpful when storing 100 pupil folders. The colors identify the group and the various numbers identify the cubby hole."

PRESENTATION

This item is displayed in the Teacher Center

- at all times
  for workshops only
  kept in labelled drawer
- sample in use
- on Traveling Teacher Center Poster
  in Teacher Center Sampler
  in Teacher Center Photograph Book

This item is usually selected by the participant who will approach a staff member and announce "I want to make one of these cubbies that I saw in the other room (on the poster, in Sandy's room, etc.)." However, a participant may well begin by simply indicating a need for more storage space. "What sort of storage are you looking for? Are all the items the same size? Does each child (group, activity, etc.) need a separate space?" This type of questioning narrows the area of concern and allows the staff member to begin building a mental image of the desired item and to reject such other items as paper organizers and bookshelves which are treated separately in this book.



"One of the big advantages of this triwall is that it is easy to use thumb tacks or for the posting of student work or other notices. If you place this cubby away from the wall, it will act as a room divider and bulletin board. Might you use this as a room divider? Might you place two of these back to back to form a resource island?" While these questions are being asked, the participant is constantly reassessing his or her needs and the flexible nature of the cubby. Also, this type of conversation may well help the teacher to see his or her room in new ways which can be actualized through the planning and building of other furniture items which will help to define the spaces of the room. This type of information will also prove beneficial when it comes time to actually dimension the cubby for its location under a chalkboard or between a door and wall and will have specific effects on its design.

Throughout this process, though, the participant may well terminate the process with a direct "I know exactly what I want, let's get started" in which case the staff member will have to decide whether to pursue the conversation in search of a better probable result, or to commence the final design and building of a cubby.

DESIGN

The design of this unit grows out of the conversation dealing with the presentation of the unit. In that conversation with the participant most design questions are answered with respect to height, width, depth, and the number of cubby holes desired. Further variations of a basically regular rectangular array of storage spaces may occur to either myself or the participant with the final unit possibly consisting of storage spaces of two sizes for different sized items. Another need might result in the provision of a smooth top on the unit instead of a top that is interrupted by the upward extension of the vertical dividers.

Just as the design is dictated by the needs of the participant, it is also dictated by the limitations of the material both dimensionally and in terms of structural strength. In our center we have two sizes of triwall, 4' x 8' sheets and 42" x 54" sheets, and our designs are engineered to make the best use of these sheets unless major problems arise with the actual use that the unit will be put to.

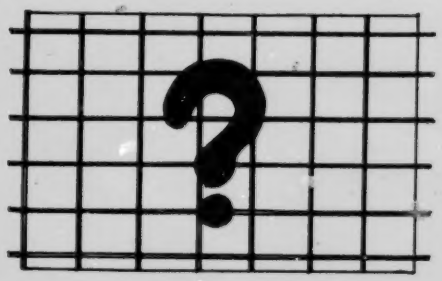
A hypothetical design situation based on a 4' x 8' sheet might proceed through the steps of determining the necessary depth of the shelves first to accomodate particular sizes of material. Next we would deal with the number of storage spaces needed and the width and height of a representative space. This information would lead to a vertical and horizontal spacing scheme that would probably provide a few more spaces than necessary, spaces that were a little wider and taller than needed to provide some room for error.

"For student work or worksheets we need a space that will accomodate a regular sheet of writing paper. Do you use any larger sizes? All right, providing for an 8½' x 11' sheet, perhaps a ½" margin will do." A ½" margin will provide a space that is 12" deep and 9" wide. This kind of spacing and using the pieces that are 48" x 96", we will need to fold 12" off of each end which will become the sides and will determine the depth of the unit. This will leave us with a space that is 72" x 48". A 72" width would allow for eight spaces that are

9" wide if it weren't for the width of the triwall which adds ½" to each space. Considering the width of the vertical dividers, if we want spaces that are at least 9" wide, we can have seven such columns of these spaces with six vertical dividers and the folded sides of the unit will give us the eight vertical dividers that we need for the seven spaces. These seven spaces will be wider than the 9" we wanted though and you have the choice of having the wider spaces or making the whole structure somewhat smaller." Once a choice is made the process continues.

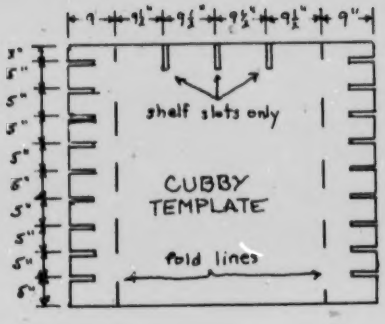
"All right, we will make the spaces wider. If the 72" width is to have six dividers, we will lose 3" of usable space due to the ½" width of the cardboard. This leaves us with 69" to cut into seven spaces. A little rapid division indicates that we are 1" shy of having 10" spacing. A possible solution would be to make all but two spaces 10" wide and the two end spaces the original 9½".

At this point the vertical spacing of the shelves can be planned. As with the layout of the vertical dividers in the unit, the amount of actual available height will be reduced by ½" for each shelf. There is a further reduction of about 3" at both the top and bottom of the unit to provide a relatively strong platform for the unit to stand on and enough cardboard above the top shelf to provide rigidity to the finished product. "At this point we have seven spaces across the front. How many children (items, etc.) do you have? Seven doesn't go into thirty-two very well though, so let's make six shelves that will give thirty-five cubbies and a space on top for the storage of other items. All right, if we use six shelves we will lose 3" of height just for the cardboard since it is ½" thick. Further, we need to provide 3" at both the top and bottom to give the unit the strength it needs to hold together when you start to load the materials into it. That removes 9" altogether leaving us with 39" that must be divided into five spaces so that we will have the thirty-five cubbies this unit needs. When we divide that what do we get? That is so close to eight, let's make all but one of them eight and that one seven.



"I think we are finally ready to go to the shop and make this item. Now <u>you</u> get to do most of the work." This description, as lengthy as it is, doesn't contain all the pauses for participant input and feedback. It can't include all the possible branching that might accompany this type of discussion and it can't include the constant interplay of words and facial expressions that indicate agreement, resigned compliance, confusion or the need for further clarification.

Our research indicates that this item has been designed by our staff in the great majority of cases. Most participants seem completely intimidated by the shop environment and considerable empathy is necessary on the part of the staff if the participant is to be involved in the design process at all. With respect to some standard cubby designs we have made large masonite templates which can be laid on top of the cardboard for tracing the basic outlines of the item.



MAKING IT

Materials
- 1½" Wide masking tape
- Triwall
- Low lustre enamel latex

Tools
- 4' Square
- Slot marker
- Saber saw
- Hammer/dowel or tape measure
- Table saw/panel saw

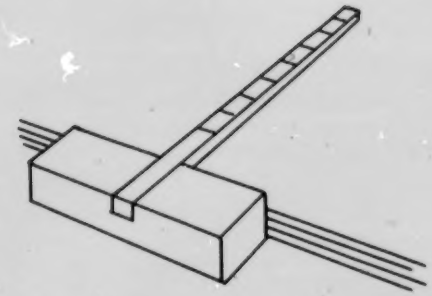
Aids to Fabrication
- model
- • template
- • pre-cut pieces
- posted instructions
- classroom use handout

How long does it take to make this item?
- 0-½ hour
- ½-1 hour
- • 1-2 hours
- 2+ hours

In the design section of this narrative, the participant has moved from initial idea to a specific set of dimensions which will dictate the final shape of the cubby. The problem is now reduced to one of laying the design out on pieces of cardboard with pencil lines that will guide the maker in cutting and folding the component parts that will finally be assembled into the completed cubby which can then be painted, if desired, or left plain and taken back to the home school on the top of a car or in the back of a station wagon or van. Aside from the templates which allow all such lines to be drawn, we make extensive use of three tools in the layout process. They are:

- a tape measure (most of our staff use tapes that combine metric scales and foot scales on the same rule)
- a large commercially made T-square with a long arm that is 48 inches long, with an inch rule inscribed on both the long arm and the short guide arm that is placed at the edge of the cardboard (this item is available from building supply houses and is called a drywall or plaster board T-square)

- a locally made T-square with a long arm that is 9/16" wide by 8" long, with scribe marks every inch, and a short arm that is 6-8" long. This tool is used to make parallel lines about ½" apart to guide the marker in cutting the seemingly countless number of slots that will be made before the finished item can be assembled. The more precise reader will question the 9/16" width in light of the use and to him/her, I point out that the slight margin of safety allowed is preferable to having to recut many slots that are too narrow. The sacrifice in rigidity is marginal in our experience.



At this point, the participant is provided with the necessary material for the actual making. In our permanent location we will cut the shelves and vertical dividers at the time they are needed whereas, for our Travelling Teacher Center we will take a sufficient supply of pre-cut material for this purpose. The shelves and vertical dividers are cut, in our shop, with a table saw having a 10" blade and/or a panel saw that will support a full 4' x 8' sheet as a hand saw is drawn across the surface guided by the mechanism of the panel saw. This item calls for a 48" x 96" piece of triwall, six pieces of triwall 12" x 96" and 6 pieces of triwall 12" x 48". The first piece to be marked is the large sheet which will form the back and sides of the finished unit. If the unit is to be 12" deep and 72" wide (as in the example design given earlier) the large T-square is used to draw lines 12" in from the ends, parallel to the ends. These end pieces will then be folded far enough so that they will stay at a right angle with the rest of the cardboard when held. The actual folding process is a two-step sequence:

(1) make a shallow indentation or score mark where the fold line is (this can be accomplished with the head of a hammer or handle of a screwdriver)

(2) while holding the cardboard down on a flat surface, lift on the piece that is to be folded with even pressure over its length (two people are very helpful here)

At this point the folded ends and all the vertical dividers can be marked and the slots cut that will hold the shelves.

"We are now ready to cut the slots in both the ends and the vertical dividers that will support the shelves. When we laid this out we decided to leave 3" at top and bottom, ½" for each shelf, 8" for four shelves and 7" for one shelf. Using this tape measure, on the end piece, measure off 3" then ½" and there should be 3" to the top of the cardboard. Lay off the same distances on the other end and mark one of these vertical divider pieces (4' x 12"). Since the

spaces aren't all the same we should mark the 'top' of the dividers so that we will put them together in the same way. If you place that marked divider on edge and put it on top of each of the other three dividers you can use it as a ruler to make the marks on each of them. Now, using this small T-square, you need to draw the lines that you will cut when we start cutting. Since the boards are 12" wide, we will need to have slots that are 6" deep so that they will slide into each other and have a 12" overlap. When you mark, use both sides of that guide bar and you will have lines that are the proper distance apart. Be sure to keep the T-square pressed against the edge of the board tightly or your lines won't be perpendicular to the edge." "Here is the saw. It is an electric saw, a little noisy, perhaps frightening at first but so is a sewing machine, and it is quite safe to use if you are aware of where the blade is and where other things are compared to the blade. Just hold it in your hand and turn it on to feel it running. To turn it off you release the trigger (push the other side of the trigger) and it will slow down and stop very rapidly. Don't try to go around a corner in the cardboard with the motor off because it will twist and possibly break the blade.

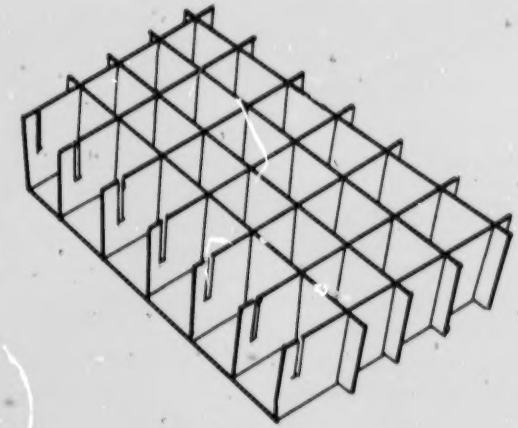
"Now let's start cutting the slots in the ends after I check your marks. They look O.K. With the cardboard sticking off the workbench a reasonable amount, place the sole plate of the saw on the cardboard, turn the saw on and here we go. There, that was fine. As you do more you will get better just the same as reading gets better with practice. A suggestion though, try to keep the entire sole plate of the saw touching the cardboard just as you would if it was an iron and you were ironing a seam.

"We might be able to speed up the cutting on the dividers if we use some spring clamps and clamp two of them together allowing you to follow the lines on the top while you cut both pieces."

At this point the participant is left to cut the material while I go on to help others. He/she will come to me with "Now what do I do" and we will mark the shelves and cut those slots next. In marking the shelves, be sure to actually measure the distance between the ends so that the shelves will fit.

"Now we need to mark and cut the shelves. The actual distance between the ends is (measure with the ends standing up) 71½" and the bottom one is ½" less than that. Allowing ½" for the width of each end and about three inches to overlap the ends for strength, we want to cut these 8' pieces to about 79" long. Mark them and cut them and I'll be back.

"All right, we are ready for the last slots and then we can put it together. When we designed it we found that we needed 3" from the end, ½" from the end and then the first space 9½" but we lost ½" in the folding so let's make the first two spaces 9½". Now you use the tape measure and let's lay out the distances, 3", ½", 9½", ½" 9½", ½", 10", ½", 10", ½", 10", ½", 10", ½", 9½" ½", 3". That should take us pretty close to the end of the piece. Check to see that there is room between the inside of the end slots for the 71" that we need. For the bottom shelf you will need to make the end space a little narrower still. Now, mark the places where you will cut and make the slots 6" deep again. When you get them cut I will help you put the finished cubby together." When he/she is done the shelves and the vertical dividers are slid together into an egg crate appearing unit which is then laid flat on its back. One end is raised and the shelves are meshed into it and pushed home. Both parties then move to the other side and, one at a time, the shelves are started into their respective slots. They are then pushed down, evenly across the length of the end, until the unit is finished.



"My husband won't believe that I did all this cutting and it all fits." "You just remind him that he shouldn't keep the tools to himself from now on for you can handle a sabre saw as well as he can after all the time you spent with one in your hand today."

CREDITS

The Further Adventures of Cardboard Carpentry
The Workshop for Learning Things, Inc.
5 Bridge Street
Watertown, MA 02172

Narrative sections by Allen Banbury.

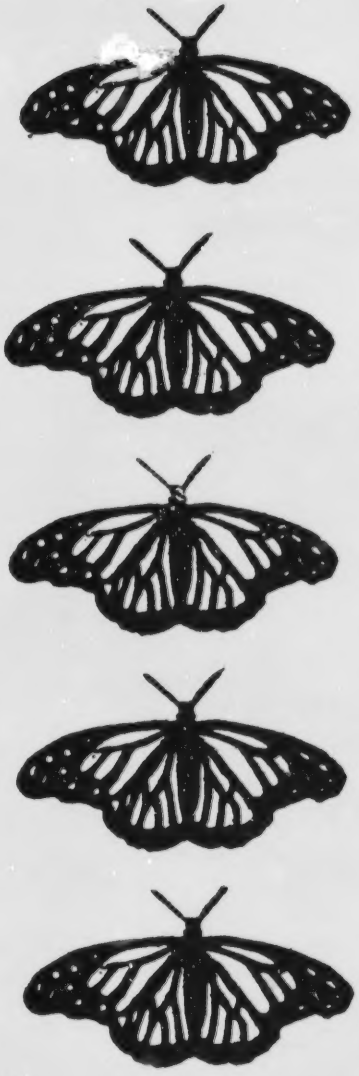
ERASER STAMPS

DESCRIPTION

Eraser stamps are a printing medium suitable for adults and children. They can be the focus of an art activity or they can complement a piece of writing or a teaching aid. They can be a resource in a classroom, a cooperative resource shared by several classrooms, or a specialized resource located in an artroom. As an art resource, they can be explored as a printing medium or can be combined with other art materials, such as crayons, magic markers, stencils, and different color inks, in order to gain more richness, interest, color and variety in the art experience. An eraser stamp gives an instant image which is quite miraculous. "Suddenly I'm an artist!" one user exclaims. Because it is easy to get results quickly, an eraser stamp invites the stamper to do lots of printing and from these many prints decide which one the stamper likes best. In addition, one person uses the images one way, a second tries some other ways and a third may explore still different ways, or some combination of what he's already seen. So, eraser stamps offer instant success for the beginner and an intriguing array of challenges for those who wish to probe printing as a topic. They can be the medium through which a carefully structured activity is pursued or they can be a means for exploring an open-ended assignment. Finally, because they are used with the common stamp pad they require little supervision or preparation as an art area in a classroom.

In terms of applicability to different parts of the curriculum our findings are that virtually every teacher, regardless of assignment or specialized training, has found ways to use eraser stamps to advantage and with satisfaction. For example, a physical education teacher used different small shapes to stamp out jumbo numerals (9" x 9" cards) from 1 to 32. These were laminated and then were available to serve as "spots" on the gym floor, the order in which students took turns or the number pattern for selecting "teams." A foreign language teacher made a vocabulary booklet using basic images and a translation of the meanings. Primary teachers make all kinds of readiness and early-reading reinforcement activities for both mathematics and language experiences.

Story-starters, bookmaking decorations, illustrations and titles are made by intermediate and upper grade teachers. Announcements of upcoming events, posters, newsletters and note paper are further applications of eraser stamp printing in any classroom. Finally, these images were just the solution for the enterprising music teacher who wanted stamps of the usual orchestral instruments. She could see many ways children could learn more about individual instruments, as well as various groupings of instruments for chamber music and full orchestra. Teachers can always find new and exciting applications for eraser stamps.



OBSERVATIONS FROM TEACHERS AND PARENTS

"I am at a great loss in art. With this tool even I feel creative. I have used figures such as the boat and the car in a pictogram to a student in New Jersey. My enthusiasm and at-easeness are contagious. The children whom I feel are really stifled, respond to the stamps and ask to use them for personal reasons."

Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- • Individual
- • Small Group
- Large Group

Suggested Classroom Use
- • Language Arts
- • Mathematics
- • Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- • Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- • Yes
- No

"How did you decide to make today's item?"
- your own idea
- • display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"

- designing
- measuring
- cutting pieces
- using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"

- Poetry
- French
- Spanish
- Math
- Speech Therapy
- Art
- Letter Writing
- Story Sequencing
- Alphabet Printing
- Hexagonal nature of Snowflakes
- Checking worksheets
- Focus of Learning Center activity
- Denominations of Money
- Pictures used to practice saying words

Some Teacher Center Games Made with Eraser Stamps

- How many (multiplication)?
- Two-Piece Puzzles
- Concentration
- Sorting & classifying activity
- Numeral Snake
- Story Starters
- Spinner board faces
- Phonics Arrow Game
- Picture Triangle Twist
- Egg Carton Toss
- Sentence-Picture Match
- Word Generator
- Spelling Cards
- Take 15
- Money Puzzles
- Play Money
- Coin Bingo
- Coin board game
- Coin matrix
- 3-piece coin puzzles

PRESENTATION

This item is displayed in the Teacher Center

- at all times
- for workshops only
- kept in labelled drawer
- sample in use
- on Travelling Teacher Center poster
- in Teacher Center Sampler
- in Teacher Center Photograph book

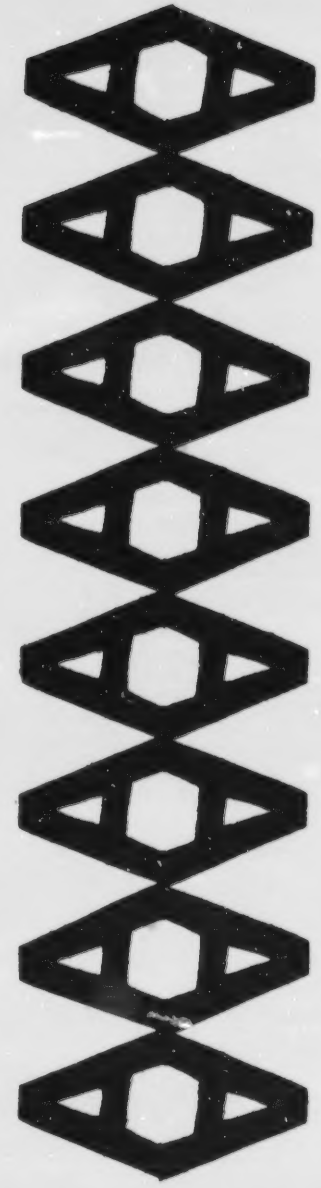
Eraser stamps are our source of INSTANT pictures, alphabets and special effects. They give impact to posters, flair or style to teaching aids, beauty to books and poetry and note paper. "So, if you are teaching beginning reading or

readiness activities and need pictures to go with the letters of the alphabet, here's one way to get your materials together. Take one of these stamps and stamp it on the ink pad and then stamp it on this scrap paper. Easy, right? Let me suggest you always use this scrap paper to check out the image first before you stamp it on your work. First you get a check on whether a picture or letter is what you want. Second, you can see whether it is inked completely and strongly. Third, you get acquainted with the stamp through these practice runs and that tends to build a success pattern.

"Eraser stamps are a kind of puzzle. Choose a letter from the alphabet. . . it can be a favorite letter, one of your initials or simply one chosen at random. . . and now on this piece of paper (preferably a small square which can be filled within a few minutes) imagine that you are doing a special dance with your letter. It is special because each print you make on the paper becomes a 'dancer' that is connected at some point with a previous print. Keep printing until the paper is filled with prints that just touch, or 'dancers' that are in touch with one another. You will want several pieces of paper in order to try this a variety of ways. You may want to select a more interesting letter. After you've done several, hold up or arrange your papers, so others can see the results. If you don't know what letter someone else used, try to guess. What might we call this puzzle activity? Mystery letter. . . disappearing letters . . . O.K., fine!

"Another single letter activity is done with a regular sheet of blank paper (8½ x 11). Take your letter for a walk or let it be you, and you are going to explore this blank piece of paper. Since you're unfamiliar with this space you may want to hold hands as you move about. This means each print is going to touch a previous one. However, you may know this space very well in which case use the letter to show us what you know is there. For example, this space may be a pet animal . . . a fall tree. . . or a special flower, so use the letter to show us what's in your space. This place may be a maze, a funhouse, or a playground which has several different kinds of structures. Can you show how you move through a narrow space, walk along a high place and tumble or slide down a fun space?

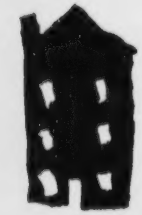
"Repetitive stamping makes interesting opportunities for exploring familiar shapes such as trees, flowers, hearts, houses or cars. The letters that make the word may be used, or a stamp of the object, itself or some figure that lends itself to the shape. Here is an open invitation to experimentation or 'messing around' with the task until some approach emerges as a satisfying one.



"An interesting variation on this, is to cut out a familiar shape from an 8½ x 11" piece of blank paper. Place cut out shape onto a second piece of paper and secure it some way (paper clips, masking tape). Now stamp some brief idea or phrase repetitively across the page so that the letters of each line touch the one above. The shape of an apple might have the words 'an apple a day' . . . or the entire saying. The outline of an ice cream sundae might evoke the word 'YUM' or 'PIG-OUT' or 'TOMORROW I DIET.' After the printing has been completed, separate the two pieces of paper and see what you have. Try the top one on a piece of colored poster paper. On the second piece of paper, cut around the edges of the shape outlined by the printing and place this on colored paper. How do you like the results? Can you find any chance occurrences that heighten the effect? If you did a second one how would you change it?

"Picture - Sentence Match, Sequenced Events, and Story Starters entail the same basic approach. Identify a scene (or sequence of scenes) which will hold children's interest or stimulate their thinking. For the Picture-Sentence Match the scenes should include familiar objects and appropriate vocabulary. In addition, they should include pairs of pictures that have some things in common but differ in a significant detail. This allows for several sentences to be written for each picture and at the same time presents a reading-for-details task which is suitable to skill level. In the instance of Sequenced Events, the task is to be certain that there is no ambiguity about the order in which things occur in the pictures. It should be noted that people bring differing experiences to their observations about pictures and therefore it is well to listen to what this child 'sees' in a picture, for while he may have overlooked significant clues about the picture, he may have done some interesting personal interpretion of the picture which has value when viewed positively. Story Starters are scenes which invite participation, recall similar experiences, or suggest some kind of suspense, imbalance or wonder.

A good size for each of these pictures is 5½" x 7⅛ which gives 16 pictures per sheet of railroad board. Once the pencil guidelines have been made on the railroad board begin stamping out the pictures. In every situation, I find it helpful to have plenty of scrap paper available for checking out individual prints, as well as for trying out ideas about pictures before stamping out the final picture. Often adults and children like to use magic markers to highlight or color in parts of a picture. Once all the pictures are completed I suggest taking a yardstick and a broad-tipped marker and going over the pencil guidelines. Next, laminate and use a large paper cutter to slice the pictures apart. Trim all the edges.



In addition to using our eraser stamp collection to make teaching aids, eraser prints are a resource to extend a topical workshop such as links between art and mathematics, the integration of art and language or Spring or Trains."

DESIGN AND MAKING IT

Materials
Slices of Eberhard Faber
RubKleen #6004 Erasers
(slightly less than 1/8" thick)
Scrapwood
Rubber Cement

Tools
Exacto Knife
Band Saw
Cutting Board

Aids to Fabrication
- model
  template
- pre-cut pieces
  posted instructions
  classroom use handout

Time to Make It
Ten minutes to ten years!

Eraser stamps are so persuasive that people often want to make a set for their own classroom.

"Select a variety of stamps you'd like to have. Print each on some scrap paper and study these prints for a moment to form an opinion as to which are going to be easy and which present some kind of challenge. What do you think?

"If you are going to do letters which ones might you begin on? I find that straight lines are a snap; E's, F's, H's, I's, etc. are sure-fire routes to success. You will get acquainted with the exacto knife and its slicing through the eraser.

"Next come the D's, P's, R's and B's; they have a mix of straight lines and curves, and they present you with interior space to be removed. One trick in all of this -- think of the blade as a pencil point that you are drawing along to make a single continuous line. A well-cut letter or shape will have single, continuous line appearance when it prints. So, go forth with confident, bold strokes of the blade. Remember, you can 'bury' your mistakes! Trust your

original cuts; go with them. Print them. Print them several times, and then if there is some detail that needs clarification, remember, the only magic I have for you is that one, deft stroke of the blade. Approach the change as a single stroke -- the opposite extreme is a dog chewing on a bone gnawing, grinding, 'worrying' it into submission. This is not your mission. Your objective is a clear, sharp edge and so a broken line with clear definition is better than a feathery or crumbling line. To that end a curve can be made by a series of straight lines.

"To copy existing images is a simple matter. Hit the stamp pad and then stamp the image on a slice of eraser. This slice can take several small prints or letters, so use the slice well; print first near the edges and then close to existing prints.

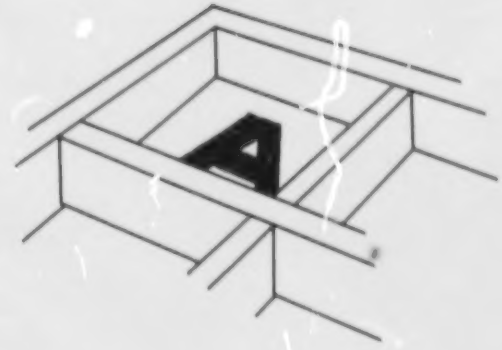
"For prints which are not among our resources, there are several approaches to one basic objective, namely, get a pencil copy no bigger than the size of an eraser slice. Whether it is the sketch of a shelf pet in the classroom, or a child's 'picture' of something he saw on a field trip, or a phrase or word of greeting or praise, for use back in the classroom, make a pencil version just the way you want it to appear. The pencil version is inverted onto a slice of eraser and on the back of the paper a complete shading job is done with a pencil over the entire sketch. This transfers the sketch, word, or phrase to the eraser and it takes care of any reversal aspect which otherwise is crucial in the instance of letters and words."

The image is cut out and ready to be mounted on a woodblock. I prefer to cut a few images and then go over to the shop and find a piece of scrap pine (1" x 2" x ?) and lay the eraser prints out as a check on size. When doing letters or numerals I take the largest letter (M or W) and size each block to it.

"There are two key elements in the mounting phase: one is that rubber cement is applied lightly all over both surfaces, the woodblock and the back side of the eraser print; two, the cement should be allowed to 'dry' (10-15 minutes) before putting the two surfaces together. Once together, the stamp is ready to begin printing. It is a good idea to stamp with it several times. . . sometimes as many as a dozen times, for after it has been handled there is a build-up of oil from one's fingers and tint from wherever . . . shop, cutting board. This means that it will not print clearly at first; some find this a big disappointment. Cheer up! Here's a good excuse for working up a good stamping rhythm -- or my favorite fantasy -- a postal clerk poised and ready to strike repeatedly a helpless parcel: FRAGILE!

"Okay, but where do eraser slices come from?" (This is always voiced in tones combining wonder and apprehension.) People learn very early in most teacher centers that such a question is followed by some version of, 'I'm glad you asked -- it's real easy and I'd love to show you how to do it yourself.' At our center the truth of the matter is, eraser slices are an exception; it's a little bit like a Deli, sure, we know you could slice your own roast beef, salami and cheese but at this moment your attention is on consumption, so we'll slice things up for you and send you on your way. So, too with eraser slices, focus on what you can do with them, get used to the x-acto blade. . . that's enough for now."

The space required for an eraser stamp center is like the organization of your spices and seasonings; it is relatively small but does need thoughtful attention to who is going to use them and how. Perhaps a more appropriate model is that of a tool chest or closet. Here, everything needs to be out in the open and ready for use. Any tool that is in use somewhere, leaves a silhouette behind showing that it is in use, or at least out of place, and exactly where it is to be returned. This provides for ease of use and for quick and easy clean-up at the end of any work period. The nature and amount of physical space required varies with the kind of collection. A tray the size of a large cookie sheet will house the letters of an alphabet and a picture for each letter. Within this tray each space is sectioned off with a low, thin partition (1/8" masonite or 3/16" pine is satisfactory). Finally, each space is stamped and this location board is laminated so that cleaning is a simple, periodic wipe-off. Small boxes such as cigar boxes are fine for a small set of stamps around a theme. The inside bottom should be stamped with each print, but partitions are not essential for a dozen or so stamps. A quick count and/or a matching of stamps to prints is sufficient. Obviously, the stamps may be used to stamp the outside of the box, too, for easy and colorful identification.



Stamp pads are usually the commercial office ink pad. The two most common ones have either a foam rubber pad or pad with a finely woven fabric cover for the inked surface. The pad should be the type that permits re-inking but this re-inking should be controlled; too much ink, put on too frequently, results in excess ink granules which are messy and bothersome. An edge of stiff scrap cardboard will clean off this build-up; push this edge like a paint scraper across the pad, wipe it off with paper toweling and repeat until the surface appears free of these granules.

Black is usually the first and most useful ink. Other colors are red, purple, green and blue. A store that has those colored stamp pads will probably have bottles of the ink. A note of caution about different colors; there is a residue of ink carried on the stamp even after several stampings in succession.

If a stamper goes back and forth from one color to another without going through a neutralized stage the colored ink pads quickly become "muddy" colored and even the addition of new color doesn't serve to offset the deterioration of the original color. The neutralizer stage can go one of two ways: one, provide a wet pad of paper toweling upon which a stamper may stamp several times and then stamp dry on scrap paper or a scrap of dry towel; two, the stamper can stamp repeatedly on scrap paper (10-15 times) until the print is very faint or non-existent. In the new color it is well to stamp back and forth between pad and scrap paper until the color is strong.

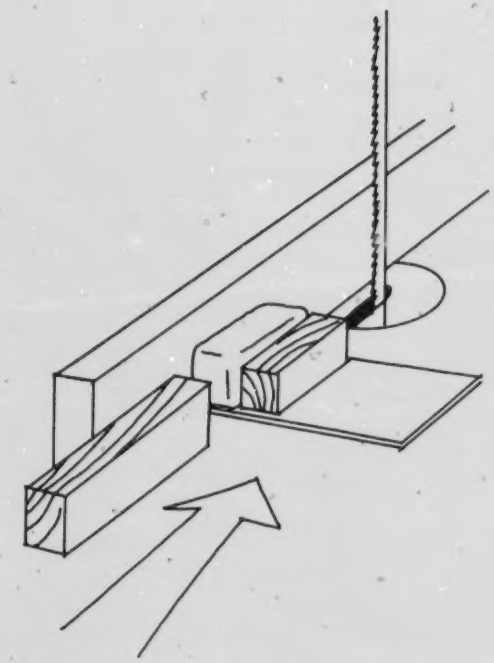
What about other materials frequently mentioned in connection with stamp pad printing? Materials such as styrofoam meat trays and pieces of inner tube which can be cut with scissors by adults and children alike are suggested. Styrofoam is a fine material for stamp pad printing; outline shapes are relatively easy to make. Certain kinds of highlighting and texturizing are easy. A styrofoam print making block will not last as well as an eraser and we have found that rubber takes ink better than styrofoam. As for inner tube, outline shapes are fine and it is clearly easier or more comfortable for some people to cut with scissors than with the Ex-acto blade. The synthetic material in the inner tube resists cuts which give highlights and other details. We certainly have not tried all possible ways and so people should try any material which is more available or easier to work.

At what age can children carve their own stamps? I'm inclined to say that each teacher has to observe closely for signs that at least a number of the students are ready to take on this kind of challenge. A parallel question might be asked about the age at which students are old enough to ride their bikes on the street. For some the signs are shown early: they show fine concentration, they get pleasure from such an accomplishment and they are completely reliable. Such children are as reliable with a sharp tool as they are with a potentially dangerous vehicle (bicycle). Sharp cutting tools are occasionally brought into classrooms for special projects. Second and third graders do handle knives in carefully structured activities. Many upper elementary grade children carry on hobbies which include sharp, potentially dangerous tools. The question becomes then, when are teachers ready to tap resources and skills which are developing outside the classroom under different learning conditions? At the Junior High and High School levels such tasks are already placed before the students without hesitation.

Teachers sometimes want to know how they can get lots of stamps in a hurry. Our Center has helped a group of teachers at a school do a "blitz" on letters,

numerals and pictures in one day. This initial push to get a good start on a large set is achieved by identifying the objective, arriving with 6 to 8 knives, cutting boards, eraser slices, and the set to be copied. A work force of five or six adults can take on this assignment as a work party and either give a morning to it, or perhaps an hour, and then shift off to some other task while someone new joins in, to keep the numbers up to five or six. Virtually everyone can do some of this work. Let the unsure start out on the easier letters or shapes. Confidence does build and it is most exciting to achieve a "blitz" like this.

The techniques for slicing erasers are straightforward but involved and for this reason we have kept the matter in our own hands. First of all, a band saw is a necessary piece of equipment. A fence attachment is highly desirable but not absolutely necessary. The fence is set at 1/8" approximately and this determines the thickness of each slice. A sharp ¼" band saw blade slices through the rubber relatively cleanly. The two or three aids that we've found useful are a rectangular carrier (1/8" masonite is fine) under the eraser, a small block of pine about the size of the eraser, and a piece of scrap pine 1" x 2" x 8" to use in conjunction with a guide as you push the eraser through the blade. With each slice of eraser a 1/8" strip of masonite is cut off. In addition the blade cuts about 2/3 the way through the piece of scrap pine. This slot enables the guide to push the eraser slice well clear of the blade on the far side. As for the eraser sized block of wood, it allows you to apply light to moderate pressure against the side of the eraser for a uniform slice and still keep your fingers at a safe distance from the blade. The right hand applies this side ways pressure on the eraser while the left advances the guide, with everything in place, through the blade.



We are working on refinements of a jig which holds the eraser and simplifies this whole process. Drawings and details may be had if interested.

The final word on cutting slices is that mass cutting of a dozen or so erasers results in a build-up of rubber on the blade. This build-up is retarded by "painting" paint thinner with a 1" easel brush onto the moving blade after every eraser or two. Stop the saw and mop up around the platform with a cloth or paper towel and then proceed. The build-up is undesirable because the blade has more friction as it cuts through the eraser and it also coats up the tires on wheels of the band saw. A pound of care is often required to clean up the blade and the tires afterwards in any event. Silicone lubricant spray has also been found to keep the blade relatively clean.

CREDITS

Eisenberg, Mary. Printing in the Curriculum. Unpublished thesis, Bank Street College of Education, New York. 1979.

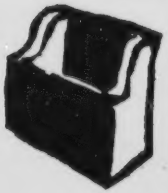
Miller, Joni and Thompson, Lowry. Rubber Stamp Album. Workman Publishing Co. New York. 1978.

Orvell, Amy and Broderick, Kathleen. Take A Handful of Letters. EDC. Newton, Mass. 02160. 1974.

Pettit, Florence. Stamp Pad Printing. Thomas Y. Crowell Co. New York. 1979.

Narrative sections by Fred Locke.

FILE BOX



DESCRIPTION

The File Box is a desk-top storage unit for organizing, storing, and filing classroom paperwork such as records, classwork, pictures and dittos.

OBSERVATIONS FROM TEACHERS AND PARENTS

"Minimizes confusion, materials are handy, everyone is secure!"

Age Appropriateness
- Pre-K
- K-3
- 4-6
- ● All Ages

Group Size
- ● Individual
- ● Small Group
- ● Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- ● Classroom furnishings

Maker Characteristics
- ● Teacher
- ● Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- ● No

"How did you decide to make today's item?"
- your own idea
- ● display
- ● introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"

- designing
- measuring
- cutting pieces
- using tools

finding references
cheerleading
someone helped me
I did it all myself!

"How did you use this item in your classroom?"

- To store rexograph materials
- As an organizer
- To file records an class work
- To store picture cards
- To store papers, dittos, files, etc.

Comments

"Child can look on prescription sheet and go to file box to get appropriate material."

"Children can get their own work sheets."

"Compartments and dividers would add to the usefulness."

"Useful and easy to make. It has helped make my desk more orderly and I can find things more easily."

PRESENTATION

This item is displayed in the Teacher Center

- at all times
  for workshops only
  kept in labelled drawer
- sample in use

on Travelling Teacher Center Poster
in Teacher Center Sampler
in Teacher Center Photograph Book

We use File Boxes in the Teacher Center to store and display spinner faces and a wide variety of books. Most often a participant will take his inspiration from these models. Both teachers and Teacher Centers demonstrate a continuous need for new and varied systems with which to organize materials.

MAKING IT

Materials
(2) Triwall 6 3/8" x 12"
(1) Singlewall 14" x 26"
Glue
1½" Masking Tape

Tools
Saber saw or
Band saw

Aids to Fabrication
- model
- template

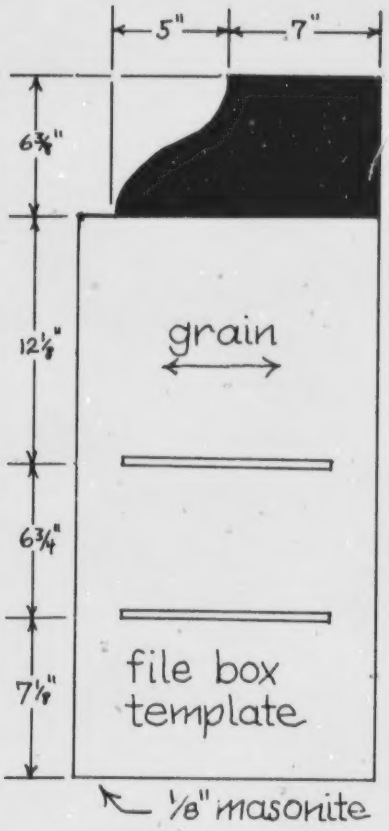
precut pieces
posted instructions
classroom use handout

How long does it take to make this item?
0-½ hour
- ½-1 hour

1-2 hours
2+ hours

The template is laid over one of the pieces of triwall and the curve is traced. Then the two pieces of triwall are cut simultaneously.

The template is laid over the piece of singlewall and the two lines are drawn. These are lines at which the singlewall is to be scored (with pencil, dowel, hammer or tape measure) and then folded. If the lines do not fall exactly over flutes in the cardboard, move the lines either right or left so that they do. Glue is applied to the two long edges of the singlewall piece. The single wall is then folded around the two triwall ends. Tape will hold it all together while the glue dries.



MAINTENANCE

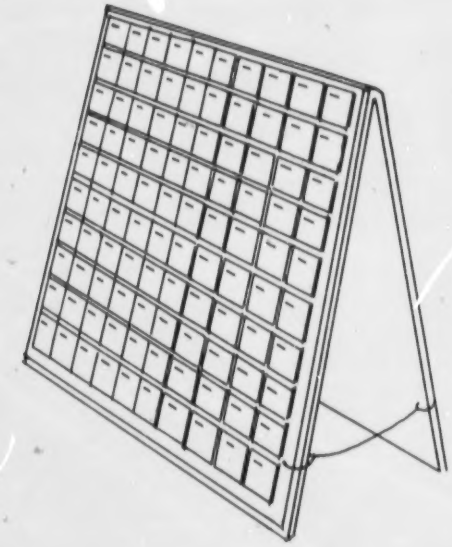
"In excellent condition. Looks great covered with contact paper."

"I have had this item for five months and neither the box, nor the dividers inside, has needed to be fixed or replaced."

CREDITS

Narrative sections by Sandy Caesar.

HUNDRED BOARD



DESCRIPTION

The hundred board is a piece of apparatus for displaying 100 numerals, usually the numbers 1-100. The numbers are easily removed or replaced by children working alone or in small groups, but the board is large enough to be used for demonstration or for activities with the whole class. It can be made to stand on a table or rest on a chalk ledge.

The hundred board is nearly as versatile as the numbers it exhibits. It has been used to teach counting, place value and multiplication. It lends itself to games involving number patterns and factoring, and is a natural vehicle for introducing coordinates or negative numbers. The fascination of arranging and rearranging, removing and replacing number tags keeps children working on a problem with great concentration.

Some teachers have made additional sets of tags which allow them to use the board as a calendar, addition or multiplication table, for counting with numerals of a different base, or with decimals and fractions. Its versatility doesn't stop here. It makes an excellent alphabet board, can be used with letter tags to generate words or practice spelling, and with word tags to make sentences. When not in use for any other purpose it can be a seating chart, a choice board or a job assignment center. Only a little imagination is needed to keep spinning off new uses.

OBSERVATIONS FROM TEACHERS AND PARENTS

"One of the most helpful items made at the Center."

Age Appropriateness
- Pre-K
- K-3
- 4-6
- ● All Ages

Group Size
- ● Individual
- ● Small Group
- ● Large Group

Suggested Classroom Use
- Language Arts
- ● Mathematics
- Multi-purpose learning aid
- Classroom furnishings

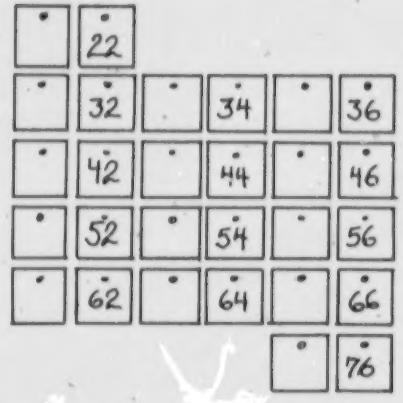
Maker Characteristics
- ● Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- ● Yes
- No

"How did you decide to make today's item?"
- ● your own idea
- ● display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- ● measuring
- ● cutting pieces
- ● using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"
- Counting by 1s, 2s, 5s, 10s
- Addition, Subtraction
- Alphabetical Sequence
- Number Sequence
- Spelling Activities
- Beginning Math



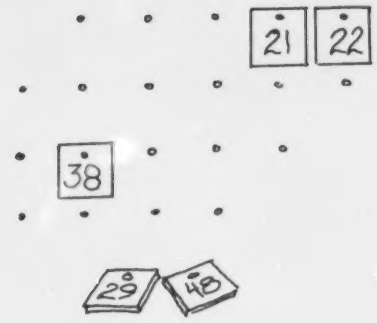
PRESENTATION

Comments

"By handling each of the cards (6,000, 700, 50, 6) (the children) were better able to understand the value for each place."

This item is displayed in the Teacher Center

- at all times
  for workshops only
  kept in labelled drawer
  sample in use
- on Travelling Teacher Center Poster
- in Teacher Center Sampler
  in Teacher Center Photograph Book



"Here's something we call a hundred board which may be the answer to a number of your needs. We can play with it a bit. Here, let's take off all these numbers. I'll put a few back on, but in a different order. Now look at what I've done and tell me where you think these four belong . . . Oh, yes! What gave you a clue?

"Once we get all the numbers on, we can do a variety of things with it. We could play tic tac toe, 4 in a row, with two teams, each giving you the names of numbers they want to claim. This is a marvelous incentive to learn number names. Or we could ask a child to hang clear colored markers over every third number and then find out what it sounds like to count by threes. There are a hundred things to do with the hundred board."

★ DESIGN

A staff person usually discusses with the participant the number of rows and columns he wants to use and what his set of numerals will include.

"It's possible to add a row of pegs on the right for storing extra pegs, markers, etc. What do you think?

"You could also put in eleven rows of pegs rather than ten so that you can go beyond 100 sometimes. So many kids think that the number system stops with 100, or that the next number is 200."

"O.K., if you just want ten rows, that's what we'll do. You can still go past 100 if you decide to, by starting, say, at 10, or at 20 instead of 1.

When you make the number tags you can make whatever extra ones you think you'll use. It's nice to have a few past 100, and a zero, too."

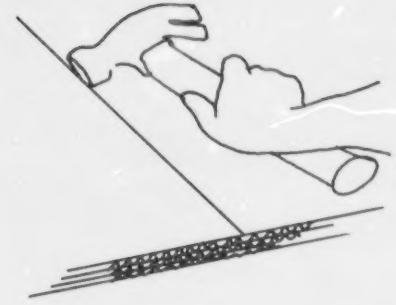
MAKING IT

Materials
Pegboard
Triwall
Straight colored pegs
Masonite
Posterboard
Dry mount tissue
Glue
String

Tools
Saw
Hammer
Awl or drill
Bandsaw
Laminating machine
Drill
A 23" x 23" piece of 1/8" pegboard (1/8" holes, 1" apart) and a 24" x 48" piece of triwall are cut on the panel saw, usually by a staff member.

Aids to Fabrication
model
- template
- pre-cut pieces
posted instructions
- classroom use handout

How long does it take to make this item?
0-½ hour
- ½-1 hour
1-2 hours
2+ hours



A 23" x 23" piece of 1/8" pegboard (1/8" holes, 1" apart) and a 24" x 48" piece of triwall are cut on the panel saw usually by a staff member.

"First we'll score the triwall for folding. Draw a line down the middle of the back side-right, 24" from the end, (lengthwise). The T-Square may help you. Hold the hammer on a slant like this, and draw it toward you along the line pressing down."

"The pegboard must be glued to one end of the triwall with white glue, which can be spread in thin lines between the rows of holes in the pegboard. Weight it down. It will take about 30 minutes to dry.

"In the meantime you can make the number tags. I'll cut a 22" x 28" piece of masonite and you can dry mount this piece of posterboard on it. When you're finished we'll set the guide on the bandsaw to 1 3/4" and cut the sandwich into squares.

"When you're cutting keep the masonite pressed against the guide while you push it forward. Stack the squares in this jig clamped to the drill press. We're going to drill a 3/8" hole in the top of each tag and the jig will help us to place it correctly as well as to do several at a time. Push this red button to start the drill. O.K., now pull the handle around toward you. Keep going until it stops. Now rotate it the other way to lift the drill. Good! Now all you've got to do is write the numbers with a heavy marker."

At traveling workshops, since we have no bandsaw, we make number tags of posterboard. First we use the template to rule off a piece of posterboard in 1 3/4" squares. Numbers are then written in the squares and the sheet is laminated, then cut along the lines with a paper cutter. The pieces are then stacked and drilled with a hand drill, taking care to center the hole at the top of each tag so that the tag hangs straight.

(Participant: My husband will never believe I made this myself.")

"Glue's dry. To finish the board, first find the hole where the upper left-hand peg will go. If there are to be ten columns it will be the third peg from the left in the top row; if you have an extra column, it will be the second peg. Punch through this hole with the awl. Now punch through every second hole in that row. Put a tiny drop of glue in each hole and hammer in a peg. Hammer until you hear it hit the table. That's it! Skip a row of holes and do the next row the same way. Can you finish it alright?

"Now we've got to bend and tie it. This is the last step. Now if you'll hold this side down, near the line, with your right hand and pull up the pegboard end with your left we can hold it over. Fold it all the way.

"There. We'll tie the bottom so it can stand. Punch all the way through one of the lower side holes with the awl, fine. Now punch a corresponding hole in the back and do the other side, too. We'll thread a string through both holes and tie it loosely. A bobby pin makes a good needle. Tie it so there's about 9" between the bottom edge. Stand it up. How do you like it?"

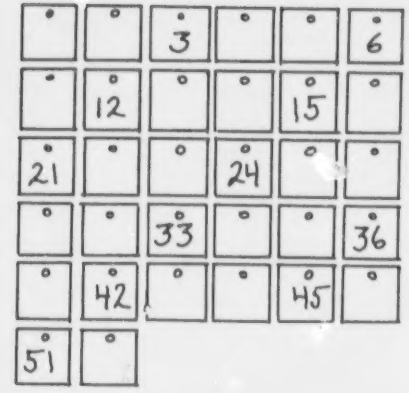
MAINTENANCE

"The holes for the pegs became loose and I had to tighten the holes before I hung the discs."

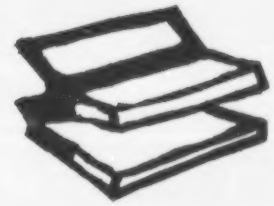
If a peg breaks off, hammer in another to force it through. Make extra blank number tags in case of loss.

CREDITS

Narrative sections by Julie King.



LAMINATING



DESCRIPTION

Lamination differs from the other items included in this book in that one does not leave our center with a "lamination" firmly in hand ready for use in the classroom tomorrow morning. Rather, it is a process that covers flat materials with a thin layer of plastic. An associated process attaches flat materials together without the use of glues that need to dry. Since this latter process is often used in mounting pictures and graphics on heavier backing board it is known as "Dry Mounting." These processes are certainly two of our most important contributions to those who use our services. The dry mount press is busy most of the time at our permanent site and all of the time when we move to a school with the Traveling Teacher Center.

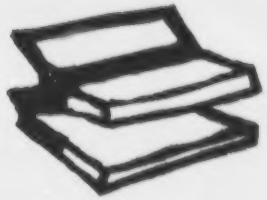
There are many applications of the lamination process but they all seem to do one or more of the following:

- Enhance the appearance and apparent "value" of the item making it more acceptable to children. This provides a finished "commercial" look. With children's work, lamination imparts and implies "value." "Here is an item of lasting value and beauty."

- Gives lovingly and laboriously produced materials the necessary washable protection to allow them to return time and again from the constant battle with dirty hands.

- Provide a surface that can be written on with suitable markers and wiped off over and over again. Examples include worksheets calling for "connection lines" or short answer responses. Also dot-to-dot games and mazes.

- Strengthen and give body to otherwise flimsy materials. Examples include worn out valued wallcharts and posters.



Dry mounting is used to provide additional strength and body to otherwise flimsy materials. Usually this mounting is done in an aesthetically pleasing way with the mounted materials being enhanced by the surface on which they are mounted. There are several advantages to mounting this fashion instead of with glue. These are:

- Materials can be precisely placed and temporarily held until they are permanently attached.

- The attachment is permanent. The adhesive won't deteriorate and loosen.

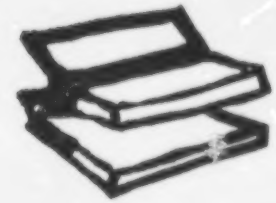
- The finished surface is extremely flat with no wrinkles and bumps from underlying adhesive.

Laminating film is a two-layer sandwich of plastics. One layer has a relatively low melting point (about 225° F) and if heated will penetrate and stick to porous surfaces such as paper. When it cools it will hold very tightly to the surface. This is known as the "poly" coat or side, after the type of plastic it is composed of. The other layer is hard transparent impervious polyester film with a melting temperature above that of the poly coat. When this sandwich is placed on a suitable surface poly coat down, and held in place with uniform pressure and heated to the proper temperature, it will adhere to that surface. When it cools, the poly coat permanently bonds the polyester coat to the surface of the laminated item. The uniform pressure is important to avoid wrinkling of the lamin.

Lamin comes in different thicknesses, different widths, different surface characteristics and different length rolls. Our experience leads us to purchase 1.5 mil (.0015") thick, glossy lamin in two widths, 11 1/8" and 25". For hand application our rolls are 200' long and we specify "poly out" which allows the material to be unrolled right onto the surface to be laminated. A "matte" or non-glare finish is also available but we don't stock this material. We also have a lamination machine that takes two rolls of material and will simultaneously laminate both the top and bottom of materials. For this "continuous laminator" we purchase the largest rolls that will fit (1000') and specify the size of the central cardboard core that the lamin is wound on.

Dry mounting is also a process that uses uniform pressure and heat to cause a heat sensitive adhesive to attach materials together. This process is used to

attach paper with important graphic content to a heavier backing. Often our participants will dry mount their materials and then laminate the surface to protect it.



Special dry mounting supplies do exist for such tasks as mounting color photographs which call for lower temperatures, and mounting maps which call for a fabric back. There are also suppliers of mount boards with the adhesive already layered on the board, ready to position the graphic material.

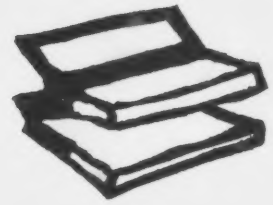
I have mentioned the continuous laminator which resembles the wringer in an older model washing machine. The rolls are heated and the lamin from two rolls is pulled through the laminator in such a way as to cover both sides of any item that is inserted and rolled through. As the laminated material emerges from the heated section of the machine and cools, it is cut loose and trimmed to the desired size. Because of the speed of this machine, in a short time a staff member can run all the material through that is produced by many participants and in this way free the participants to continue making instructional aids instead of spending their time mastering a new skill. Our continuous laminator is not an industrial rated machine but will handle material that is less than 25" wide. We feel that this machine also allows a savings in material over the hand process for large rolls (1000') of lamin save about 8% over small rolls (200') and materials such as lotto cards and concentration game cards can be fitted quite closely together in the rolls before the rolls are turned on which pulls them in clearing the way for the next set of cards of other irregular sized materials.

★ OBSERVATIONS FROM TEACHERS AND PARENTS

"You can't believe how much it has meant to have the laminating machine be in our school (for a week). People who have never stayed after school have been staying and it has been on all day for the entire week. Who knows what the impact is but I know it will help our program in some way. Just the staff interaction around the machine is great. Can we reschedule a time to have it again . . .?"

Age Appropriateness
- Pre-K
- K-3
- 4-6
- ● All Ages

Group Size
- ● Individual
- ● Small Group
- ● Large Group



Suggested Classroom Use
- Language Arts
- Mathematics
- ● Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- ● Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- ● Yes
- No

"How did you decide to make today's item?"
- ● your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- measuring
- cutting pieces
- ● using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself!

"What topic was taught with this item?"
- All areas of math--laminating all small items (that are) handled often
- Phonics cards - initial consonant letter and picture
- Dictionary skills - laminated words
- Preserving art work
- Superheroes pictures used for story starters
- Telling time
- The seasons
- Geography - laminated map which children could draw on
- Vocabulary lists

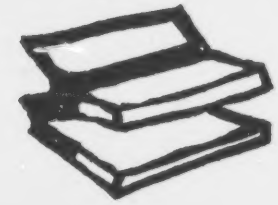
Comments

"The lamination increases the life of the activities by years. It also makes the items attractive and almost gives a commercial appearance."

"The laminated items have encouraged our Parents Association to consider purchasing a machine for our school."

"Lamination of these pictures enables them to be used by more than one teacher--borrowing can occur between teachers; (it also) enhances longevity of instructional devices made."

"The children show more interest when they can handle the shapes (for math) and turn the hands on the (laminated) clock."



PRESENTATION

This item is displayed in the Teacher Center

- at all times
  for workshops only
  kept in labelled drawer
  sample in use
- on Travelling Teacher Center Poster
  on Teacher Center Sampler
  in Teacher Center Photograph Book

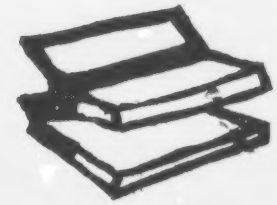
This process needs very little presentation or introduction. In a large group, small group or individual setting it is usually sufficient to state that "those materials would certainly last much longer if they were laminated."

"What do you mean laminated?"

"I mean covered with plastic in that dry mount process over there so that your hard work won't disappear under a layer of grime by the end of next week. It would be a shame to go to all that trouble and have the fruits of your labor be made unattractive and unusable because of greasy fingerprints or a water spill. When we finish laminating these materials you will probably get tired of them before they get tired unless they are badly abused. You will also have an item that says, 'I am finished. My maker cared enough to go that last mile. I am to be valued and looked after for I am special.'"

Another use might be suggested in this fashion. "Instead of placing those worksheets inside a folder which can be erased, let me show you how to laminate them. When we are through, the writing will wipe off as easily as it does with the folder." This use also encourages the teacher or other adult to spend quite a bit of decorative time on an item that will survive repeated uses.

Dry mounting also needs little introduction to the participants. To those who are unfamiliar with the process and involved in some task that would benefit from dry mounting a conversational mention of the process is sufficient. "That white glue isn't really satisfactory for putting those papers together is it? The paper distorts when it gets wet and there is often a wrinkle where the glue is. If you intend to laminate the finished piece, those wrinkles will give you a strange appearance because the lamin won't be uniformly attached. Rubber cement has some advantages but it will lose its holding power over the years and I imagine you want this to last. When you are ready I will show you how to mount these pieces on that sheet so that they are flat and permanently bonded. You can often do the laminating at the same time and that might save you a little time."



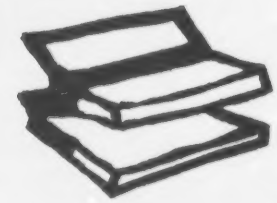
Most of our participants come to us knowing that they intend to use the laminating and dry mounting processes. The teachers have probably had a course in Audio-Visual techniques at some time and gained a familiarity with the process at that time. Many teachers have been using self-adhesive transparent materials to laminate their self-made materials and are familiar with the advantages. This large group will often have saved many items that were going to be covered when "I get time." When they learn of the existence of our press and continuous laminator these materials appear in shopping bags and participants have been known to spend several weeks, twelve to fourteen hours each week, laminating the backlog. Laminating is specifically listed in our pre-session publicity when we go into schools, and when The Traveling Teacher Center arrives there are many teachers who have been preparing materials for laminating.

DESIGN

Lamination and dry mounting, as processes, don't require much designing. The process occurs in an area which is designed and equipped for these tasks and, as a result, the only necessary preplanning is with respect to the sequence of steps that will occur and the participant can often use some help here.

"I see you are making a hundreds board. Are you going to laminate all the number squares? Might I make a suggestion? If you cut them all up, mark them, drill the holes for hanging and THEN laminate, you will have to trim the edges of those squares by hand and that is at least 400 edges. That doesn't even count clearing those holes. I suggest that you draw light pencil lines on the board to guide you, make the numbers on the squares, and then laminate. Now

when you cut and drill you will be trimming both the board and the lamin and you will be avoiding the task of positioning those small squares on the lamin one at a time.



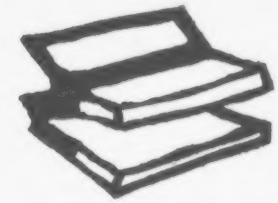
Another situation might occur as follows. "Are you making a puzzle? When you dry mount the picture on the masonite and then laminate you can often get a poor seal between the lamin and the picture because of the surface irregularities of the masonite. I suggest that you laminate the picture on one side only and then dry mount that combination on masonite that is a little too large. Now the picture will have a better finish and you will trim the combination when you trim the masonite.

Often the planning process results in a decision NOT to laminate. "Mary, it looks as though you have been saving Learning Magazine centerfolds (or restaurant place mats, or travel posters, etc.) for years. Do you use them for wall posters? They're in very good shape. There is a disadvantage to laminating wall mounted material and posters that you should be aware of though. This lamin is glossy and in most lighting situations the glare from the surface of the lamin makes the picture extremely difficult to see. There are additional problems, in that when we laminate on both sides, as we should to avoid curling with changing humidity, the poster won't fold conveniently for storage, and that which made it durable has also made it awkward. Perhaps your best bet would be to continue to use them without lamination and take particular care in storing them between uses." This discussion would take place far more often if we had a reduced supply of lamin. It would take place much less often if participants were made to pay for the lamin they used. As a final note here, matte finish lamin exists but we don't presently keep a supply.

Most of our lamination is on both sides of fairly thin (6 ply, 0.024") railroad board. Covering both sides is necessary to escape the effects of humidity changes on the board which curls toward the lamin on humid days and away from the lamin on dry. This double lamination creates a golden opportunity to create a variation on the activity that is to be laminated. "Are you ready to laminate that spinner face (worksheet on oak tag, game board, etc.) now? Have you used the other side? Using both sides cuts your storage space needs in half and, of course, we save on materials."

There are a few other planning or design considerations that will affect the decision to proceed and what steps to take. Often materials are brought in that resemble a collage with many items being glued, taped and stapled to the surface. Usually this includes pictures, scraps of fabric, string and yarn, and pockets that need to be open for storage. The problem of laminating these surfaces is

that the lamin doesn't cover uniformly, and unsightly tape and staples are sealed in plastic. There is good adhesion on the high places and poor, or no adhesion in the low places. It must be remembered that the textures and shapes of yarn and fabric will often be completely covered and if pockets are to continue to function under the lamin their openings need to be accessible. In some cases the participant will unstaple and untape all items and then with small pieces of dry mount tissue, dry mount these objects in their proper place. There is always the possibility that the participant will decide against this much labor, or will decide to go ahead and laminate with all surface irregularities as they were. In the dry mount press this can occur but, due to the restricted throat of the continuous laminator and the possible effect of the staples, these materials can't go through it.



One last design consideration is the effect of the heat on the material. Children's work is often in crayon and wax-based crayons don't do well when heated to 225° F. They will melt and run in the paper like water. Temperature also has a deleterious effect on other items including some photographic materials, particularly on rosin coat paper and color prints. For these materials there are special low temperature dry mounting supplies and the participant needs to be told of these problems.

MAKING IT

Materials
Laminating film
Dry mounting tissue
(sheets or rolls)
Release Paper - treated 2 sides
(used to protect press)

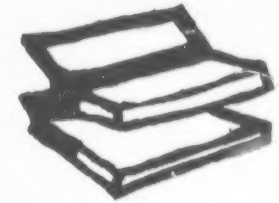
Tools
Dry Mount Press
Tacking Iron
Flat steel weights
Continuous Laminator
Matte knives/Utility knife
Metal straight edge
Scissors
Paper Cutter
Traveling Teacher Center
16" wide press
tacking iron

Aids to Fabrication

- model
- template
- pre-cut pieces
- • posted instructions
- classroom use handout

How long does it take to make this item?

- • 0-½ hour
- ½-1 hour
- 1-2 hours
- 2+ hours



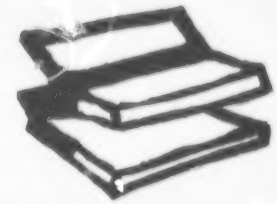
This is a process that our participants seemed to need quite a bit of help with despite the assumed contact of many participants with the process in their professional course work.

WORK AREA

Lamination and dry mounting require a considerable amount of area as a work space. The press needs a space near an electrical outlet that is low enough so that small people can operate the closing mechanism without herniating. Extensions of this surface at the sides can be used to stop material from sagging when large sizes are pressed. A space for preparing materials for insertion in the press is needed and could be as large as 36" wide and 30" deep. This area needs to be at workbench height as the user will spend quite a bit of time bending over it to cut and position materials. Consideration should be given to the fact that a lot of cutting will take place on this surface with a matte knife. Any type of surface will, in time, be irreparably scared. My preference is to work on a hard surface like Formica with replaceable chipboard or mount board on top and do all cutting with a very sharp matte knife and very light pressure. You need to watch for heavy handed participants though for if they penetrate the paper board the blade will be instantly dulled on the hard table top. A flat space is also required for the cooling of materials after they come out of the press.

The continuous laminator needs a fairly large area for materials to be stacked and sorted by size. In the running of this machine you are usually able to fit small pieces into the spaces created around the larger items and having them close at hand makes this possible.

THE PROCESS



"Ready to laminate now? Alright. This is the lamin and it has a shiny side and a dull side. The dull side is glue that will stick to your material when it is heated in the process. Your material is quite thick (more than .050") and we only need to laminate one side unless there is something on the other side. Since we are only laminating one side we probably should bind the edges with the lamin as we laminate it. Now, let's put the lamin dull side down on your piece and allow about 2 inches from the edge and the top. Use that tacking iron to apply heat and just tack the lamin in place. Don't slide the iron around, the press will do the real work. You just want to tack the lamin in place. Now, using this straight edge and knife, trim the lamin to leave two inches on the other two sides of the piece. The knife is very sharp and should stay that way unless you press too hard. When you cut materials off the end of the roll, make your cut square and take off the whole end. That way the next user will have a straight end. Now turn it over, use the matte knife and cut a triangle of lamin off each corner that just touches your piece. Using the tacking iron, attach each of the four flaps to the back of the piece which binds the edges.

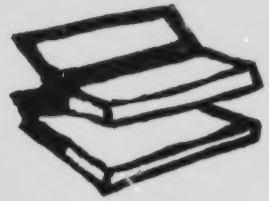
"Bring over that folder of shiny paper there. This is a special release paper that the lamin won't stick to and everything that goes into the press must be in a folder like this so that the press won't get messed up. Now, in the press. Close it down and check the clock. You will take it out in about a minute. Leaving it in too long doesn't often do damage but some materials will scorch. I quite often tell people that it can stay in for an Oops. An Oops is a length of time that starts when the press closes and ceases when you remember that it is still closed and say 'Oops.' Leaving it in for a smaller time than necessary will be shown by the appearance of the surface. If it appears that small flat shiny spaces or bubbles are just under the surface then you probably need more time.

"Time is up. Out it comes and onto a flat surface so that it won't have a permanent bend when it cools. When you get the hang of this whole process you can be preparing one while the other is in the press."

"You are on your own now. If you have any problems let me know."

The process is the same for two-sided laminating except the material is folded in the lamin and tacked. The edges are trimmed to within about ⅛" of the item and after pressing the lamin is trimmed back with enough overlap remaining to seal the edges. The necessary overlap varies with the thickness of the material

that is laminated. Some will want to trim the lamin to the edge of the material and need to know about possible delamination.



Occasionally, in times of high humidity, there is enough moisture in the material that is being processed to make copious quantities of steam. Besides startling the participant it also has the nasty habit of lifting the lamin off the surface and creating wet bubbles where it has condensed. When this occurs the material needs to be dried in the press prior to either laminating or dry mounting.

In the dry mounting process the pieces to be attached are cut to size. Dry mount tissue is tacked to the entire back of the item that will be mounted and any overlap is carefully trimmed away. A paper cutter is handy here and a ruler pressed down on the material just at the cutting edge of the paper cutter will help insure a clean, non-sliding straight cut. This now-trimmed piece is positioned on the mount board and tacked there. As with the lamination, the piece goes into a folder of release paper and into the press. Press times are usually shorter for this than for laminating but if you are working with thick materials it will take longer for the heat to percolate through the material and activate the adhesive. If a piece is to be laminated also it can be prepared for both at the same time and pressed only once.

When you are dealing with materials that are larger than the press capacity, you can tack in several places and reposition the material in the press several times until all of the surface has been pressed.

MAINTENANCE

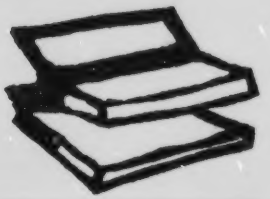
"Laminated edge on two or three pictures need to be repaired using Scotch tape."

"Corners tend to peel apart but I just tape them."

"Perhaps at the end of the year it (the laminated item) will need to be wiped off with a damp sponge."

A maintenance procedure that is not easy, is the periodic cleaning of the dry mount press or continuous laminator. Both, in time, will accumulate adhesive and other dirt on their working surfaces and a cleaning will be required. Instructions are included with the equipment and cleaning supplies can be

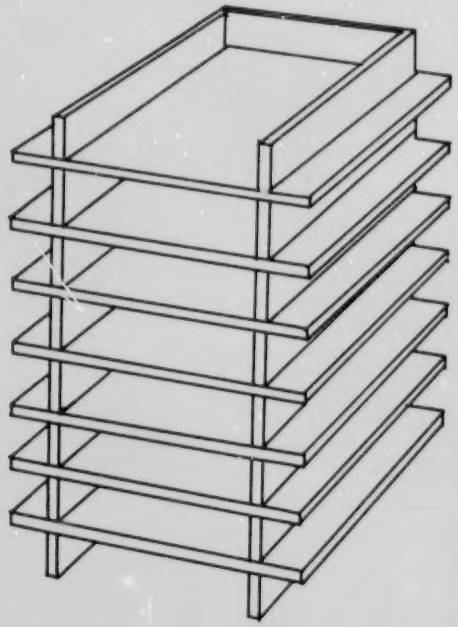
purchased from the manufacturers. I found that I started to exercise much greater attention to detail, including the use of the release paper folder, after just one cleaning of the equipment. It is a long, hard job that needs to be done carefully because any scratches in the laminating surfaces will leave their imprint on all subsequent laminated materials.



CREDITS

Narrative sections by Allen Banbury.

ORGANIZER



DESCRIPTION

The paper organizer has seven vertically stacked cardboard shelves. Each shelf is designed to hold a 2½" high pile of 8½" x 11" papers or folders. It is compact enough to be stored on a desk top and it provides for the neat, systematic, and accessible filing of materials.

Organizers are used to store rexograph sheets, (C.A.T.) materials for make-up tests, and books. They are drop-in shelves for work done and pick-up shelves for work to be done. In this role, teachers report that they:

"Improve student self-direction."
"Encourage their (the students) assuming responsibility for their work."
"Make materials readily available to teacher, students and aides."

When asked if the organizer helped her, one teacher answered affirmatively, stating, "Kids get better teaching when the teacher is organized."

Organizers can be made with any number of shelves or compartments.

OBSERVATIONS FROM TEACHERS AND PARENTS

"This system keeps me from getting frustrated and I don't like to get frustrated."

Age Appropriateness
- Pre-K
- K-3
- 4-6
- All Ages

Group Size
- Individual
- Small Group
- Large Group

Suggested Classroom Use

Language Arts
Mathematics
Multi-purpose learning aid
• Classroom furnishings

Maker Characteristics

• Teacher
Aide
Parent

"Had you planned to make this item before you came to the Center?"

• Yes
No

"How did you decide to make today's item?"

• your own idea
• display
• introduced by staff
suggestion of co-worker
other

"How did the staff help in the creation of your item?"

designing
• measuring
• cutting pieces
• using tools
finding references
cheerleading
someone helped me
I did it all myself!

"How did you use this item in your classroom?"

- Each reading group had a slot.
- Slots for worksheets and supplies for specific topics of study
- To sort papers instead of piling them
- A place for children to deposit homework and classroom work
- To store labelled folders for activity groups
- To store books

Comments

"The children always know where to find paper. It adds to their independence. I have made three organizers on my trips to the Teacher Center. The only problem is the tape used at the corners. It comes off all the time. The last one I made I painted and that has held up much better."

"This item aids in having instructional materials accessible to pupils."

"The children know where to find their materials. I remain calm because I am less disposed to misplace important folders, worksheets, etc. Parent aides who come in at odd hours can figure out the arrangement without much difficulty. I have made seven and could not function without them. I cannot imagine a better substitute, although I have used many worse."

"The organizer adds a touch of class to the office. It also has allowed me to keep my desk in order."

"I think it is great. Would love to make another. Would like one with wider compartment."

"The organizer helps students become responsible for checking to see if they are up to date on class/individual assignments. Papers are more accessible. Students do not have to wait for the teacher to give them work they missed after absences."

"If teacher is better organized, kids get better teaching."

PRESENTATION

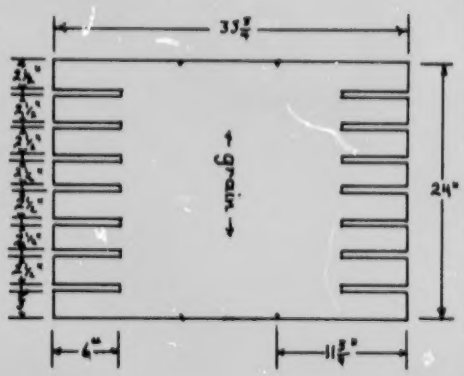
This item is displayed in the Teacher Center

- at all times
  - for workshops only
  - kept in labelled drawer
- sample in use
- on Travelling Teacher Center Poster
- in Teacher Center Sampler
- in Teacher Center Photograph book

Teachers are given the opportunity to see a sample so that they know what the end product is like. At this point they can decide how many shelves they would like.

DESIGN

A template is used in the construction of the organizer. On occasion, the organizer is cut down to 3 or 4 shelves, but generally it is a standard item.



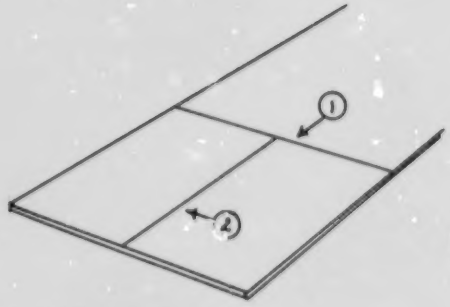
MAKING IT

Materials
Triwall
1½" Masking tape
Latex paint

Tools
Template/Slot marker
Pencil
2 to 4 Spring clamps
Saber saw
Table saw/panel saw
T-Square
Hammer/tape measure

Aids to Fabrication
model
• template
• pre-cut pieces
posted instructions
classroom use handout

How long does it take to make this item?
0-½ hour
• ½-1 hour
1-2 hours
2+ hours



The organizers are much easier to make if two people work together to make organizers. This is because 2 backs can be cut together and the slots in the shelves are much more difficult to cut if they are not held down.

Staff person draws a line 33 3/4" in from and parallel to the end of a full sheet (4' x 8') of triwall (line 1). Then he draws a line dividing the 48" x 33 3/4" piece in half at the 24" point (line 2) making 2, 24" x 33 3/4" pieces.

Staff person cuts these lines while participant holds up the overhanging edge (first line 2 then line 1). It is important that line 1 be cut as straight as possible especially if a template is not to be used.

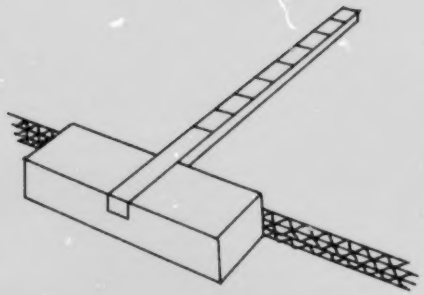
While cutting these lines staff person explains use of saber saw.

> "Have you ever used a sewing maching or an iron? Well this is like a cross between the two of them. Keep the blade on the line and press down lightly making sure it is sitting flat on the board." At this point specific directions are given concerning starting, stopping and holding the saw.

If template is being used, staff person lays template over triwall pieces, fastens 2 spring clips opposite each other on the long sides, and instructs participant to trace the slots making sure the pencil point is kept against the side of the template. Then mark the four notches. It is most important that the slots are traced carefully.

If no template is being used, have participant place T-square against long edge and mark every three inches along the 24" edge. Do this with the opposite 24" edge.

Then staffer explains how to use slot marker. (See picture.)



"Place butt against end of board bringing edge up to one of the marks. Move the slot marker slightly so that the mark falls halfway between the 2 edges of the slot marker. Draw a line down both edges from the 6" mark. Connect the ends of the 2 lines."

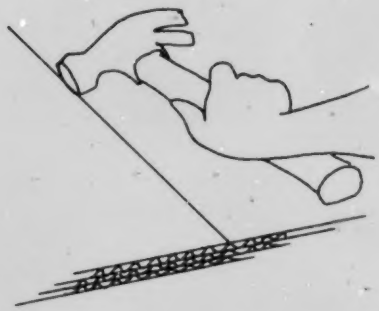
If two organizers are being made, clamp the marked back on top of the unmarked back placing clamps on the 33 3/4" sides at about 8" from the marked end to be cut.

One participant holds the backs down as the other cuts. The clamps hold the end being cut away from the table. The "holder" should watch to see that the cutter does not nick the end of the table with the saw.

The cutter should be instructed as follows: "Start from the right side and work toward the left. Cut on or to the outside of the lines. If you cut inside the lines, the shelf won't fit in the slot. Saw down the line and when you get to the end, stop and rotate the saw counterclockwise (to the left). Do not turn the saw off when you rotate it! Go to the end of this line and pull the saw straight up and out of the board. Then cut the left line of the slot.

If you can cut using one hand, hold the board with your left hand, palm facing up.

Cut the slots on both ends."



Staffer takes T-square and draws line at 11 3/4" from both ends (see picture). He or participant uses edge of hammerhead or tape measure to lightly crease along lines. This is best done by standing facing line, place hammer at the end and drawing it straight back to you.

200

201

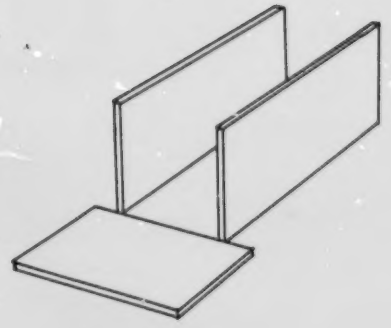
To fold, press left slotted edge down with left hand. Place right hand under the center of the back. Lift back and press down onto slotted edge. Turn the organizer back around 180° and do the same with the other end.

Staffer pre-cuts 12" x 96" strips of triwall on table or participant cuts strips with saber saw.

Participant uses T-square to measure the six 14" strips on one 12" x 96" strip.

> "Place the edge of the T-square tight against the top edge of the strip. Place the 14" mark on the end of the strips and draw a line down the right edge of the cross piece of the T-square. Then put the 14" mark on the line you've just drawn and draw the next line."

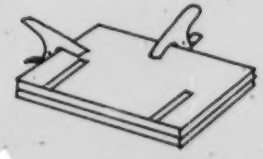
Cut 7 of these 12" x 14" strips. If making two organizers, clamp two of the 12" x 96" strips together before cutting.



Have participant hold cut-out piece with its back flat on the table and its sides straight up (U). Place shelf on the table with one long edge against folded cardboard so that there is an equal amount of overhang on either side of the folded back. Place marks on the shelf where the edges of the two upright sides touch it.

Participant uses slot marker as before to mark 6" slots where the two double marks occur.

Another shelf is placed flat on the table with one of its long sides placed against the marked edge of the first shelf. Marks are placed on the second shelf where the slots occur on the first. The slot marker is then used to make the 6" slots on the second shelf. The first shelf marked should be used as a template to mark half the shelves needed. If two people are working, one can transfer the marks and the other can draw the slot.



Now place a marked shelf over an unmarked one placing a clamp on the center of the "U" side opposite the marks, and on one of the 12" sides about 2" beyond the marks.

To cut, hold the shelf just over the edge of a corner of a table so that the slot is parallel with the table edge.

Cut the line furthest from the edge first and then the one closer to the edge. It is very helpful to have someone hold the shelves during this process.

Turn the shelf 90° and cut the other slot.

When the shelves are all cut, assemble by placing the back on the tables, the sides up, and slip the shelves in.

To make the product more finished, tape the edges with 1½" wide masking tape and paint with latex paint.

MAINTENANCE

"The only problem is the tape at the corners; it comes off all the time. The last one I made I painted and that's held up much better."

"Strips of spongy plastic (used in packing) or very soft rubber needs to be glued to base's bottom to prevent constant slipping around. Arced cut away section in each level should be deep enough to provide easy access to papers lying on "floor" of each section. A satin (non-gloss) polyurethane finish adds a quality look."

CREDITS

Narrative sections by Rich Bechtel.

ROOM DIVIDERS

DESCRIPTION

Room Dividers are folding triwall screens. The size of each panel and the number of panels can be varied. Room dividers are used for creating secluded areas in classrooms, for differentiating spaces, and for displaying childrens' work. Room dividers can help a teacher define, control and use her classroom space in order to achieve curricular and behavioral goals.

OBSERVATIONS FROM TEACHERS AND PARENTS

"It gives children privacy while changing for gym!"

Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- Individual
- • Small Group
- • Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-purpose learning aid
- • Classroom furnishings

Maker Characteristics
- • Teacher
- • Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- • Yes
- No

"How did you decide to make today's item?"
- • your own idea
- display
- • introduced by staff
- suggestion of co-worker
- others

"How did the staff help in the creation of your item?"

- designing
- measuring
- cutting pieces
- using tools

finding tools
cheerleading
someone helped me
I did it all myself!

"How did you use this item in your classroom?"

- to separate my group from the rest of the class
- for games and independent activities
- as a display screen
- to minimize distraction
- decorated divider with reading stories

Comments

"Displays materials for easy viewing, separates students when doing independent activities."

PRESENTATION

This item is displayed in the Teacher Center:

at all times
for workshops only
kept in labelled drawer
- sample in use

on Travelling Teacher Center Poster
in Teacher Center Sampler
in Teacher Center Photograph Book

"You would like to make a room divider? How large would you like it to be? Actually, the first thing to decide is how tall you would like it. Do you want to be able to see over the top to supervise the children? What age children are you working with? You could choose to make a book display rack or a bookcase which could double as a room divider. No, you want a room divider! Then we should decide how many panels you would like and how wide each panel should be."

MAKING IT

Materials
- Triwall (most commonly 42" x 54")
- Masking Tape
- 36-Ply cotton wrapping twine

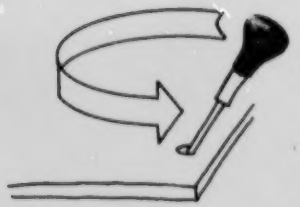
Tools
- Saber saw, Panel saw or Table saw
- (2) Awls
- Scissors

Aids to Fabrication
- • model
- template
- pre-cut pieces
- posted instructions
- classroom use handout

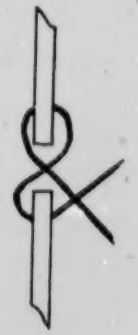
Time to Make It
- 0-½ hour
- • ½-1 hour
- 1-2 hours
- 2+ hours

Triwall panels for room dividers can be cut to size with whatever saws or knives are handiest. Normally in the shop we cut 42" x 54" sheets in half, the long way, on the table saw. The 54" height provides an effective visual barrier for seated students. At the same time it allows a standing teacher to see over the top.

"Here, let's set these panels up on a work table. You want to poke holes in each panel so that they can be hinged together with string. The holes should be about an inch in from the edge. Three holes per edge should be sufficient. I would put one hole about six inches from each end and one hole in the middle. If you poke the holes through two sheets at a time they will be lined up perfectly. After poking the first hole, leave the awl in the hole to keep the sheets lined up. After all the holes are poked, it is a good idea to ream out each hole separately, by rotating the awl, to make them easier to thread later on.



"Before going on to the next panel it would be good to tie these together. There is a special kind of knot to use that really does a good job. Actually it is not so much a knot as a way of threading. You want to put the string through the holes so that when you look at it from the end it forms a figure eight. Take this end and go down through this piece and up through the other one. Do you see that? Now when we flex the joint, all the stress is taken up in the string, not in the cardboard. When you thread and tie these it is a good idea to leave some slack in the string and tie the knots loosely at first. This makes it easier to thread and tie the other holes. Then you can go back and take up the slack and tie the knots tightly."



"When you have these two panels done, you can go on and add another panel."

"Oops, one final thing. If you want to tape the edges of your panels and paint, it would be good to do it now before they are tied together. Taping and painting makes these things last longer as well as providing some fire-proofing and keeping the bugs out of the cardboard."

CREDITS

The Further Adventures of Cardboard Carpentry,
Workshop for Learning Things, Inc.
5 Bridge Street
Watertown, Massachusetts 02172, 1972

Narrative sections by Sandy Caesar.

SPINNERS

DESCRIPTION

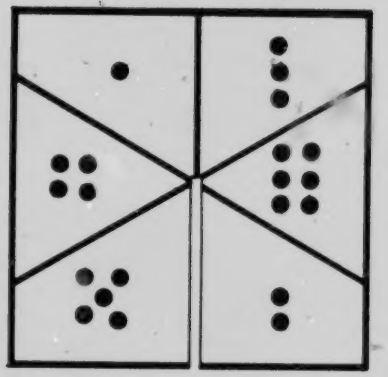
Spinners give a game format to learning activities which are often reinforced through routine drills; they are not a replacement for drill or practice sheets, but they are a high motivation, flexible approach to important learnings in the pre-school and elementary years, which offer variety to the process of internalizing a skill or concept.

In talking about Spinners, I am in fact referring to the interchangeable faces that are slipped onto the base which holds the arrow (spinner). Each face presents an array of facts, tasks, or elements which are related in some way but different from each other. So that a kindergarten teacher wishing to focus on color recognition makes a color "face" for the Spinner. This face will be sectioned off into the number of colors to be learned. For the reading teacher wanting an activity giving practice on blend recognition and vocabulary growth, the face she makes will contain the array of blends her students are ready for. A face might have as few as three sections or as many as twelve; age level, nature or task, and ease of recognition are primary considerations in determining how many sections on a face.

The element of chance raises players' interest levels in this activity, while the open, direct presentation of all the possible tasks or questions which each player may have to deal with, is a sound educational technique. There are no surprise questions; there are only repeated chances to practice something that is important to learn. It is very common for players to perform a task for someone else, whose turn it actually is. This natural tendency is supported through this game. Another way of saying this is, players love to take their chances. They wish they could spin continuously. In this way, even though it is not their turn, they are checking out their "answers" against those of the player whose turn it is. In this way, Spinners do have a competitive aspect, however, teachers can control or limit this so that the competitive aspect is a supportive, positive element.

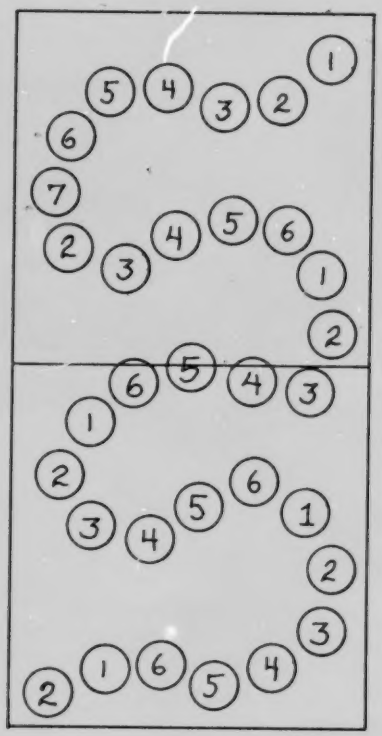
This Spinner (11" x 11") makes it most suitable for small group activities while its flexibility (interchangeable faces) make it excellent for targeting those skills needed by individual students. Occasionally, teachers have made an over-sized Spinner (22" x 22") which enables them to lean it up against the chalkboard and use it as a whole class teaching aid.

A list of teacher uses reads like the elementary curriculum. Included are beginning numeral and alphabet recognition activities, number concepts, spelling, phonics, reading, vocabulary, fractions, addition and subtraction facts, days of the week, and story starters. Our center has compiled a booklet detailing representative faces with suggested uses. However, Spinners do constitute a teaching device that many teachers and aides found well suited to adaptation to the specific skills their students needed.



OBSERVATIONS FROM TEACHERS AND PARENTS

"All (the children) were overwhelmed with joy!"



Age Appropriateness
- Pre-K
- K-3
- 4-6
- • All Ages

Group Size
- • Individual
- • Small Group
- • Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- • Multi-purpose learning aid
- Classroom furnishings

Maker Characteristics
- • Teacher
- • Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- • Yes
- • No

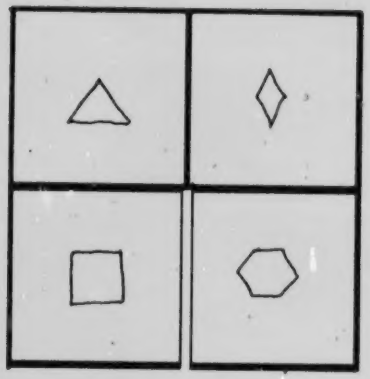
"How did you decide to make today's item?"
- your own idea
- • display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"

designing	finding references
measuring	cheerleading
• cutting pieces	someone helped me
• using tools	I did it all myself!

"What topic was taught with this item?"

- Math	- Fractions
- Reading	- Addition
- Multiplication	- Syllables
- Phonics	- Spelling
- Alphabet	- Colors
- Beginning Sounds	- Vocabulary
- Numeral Recognition	- Days of Week, Months
- Time	- Match Numerals and Words

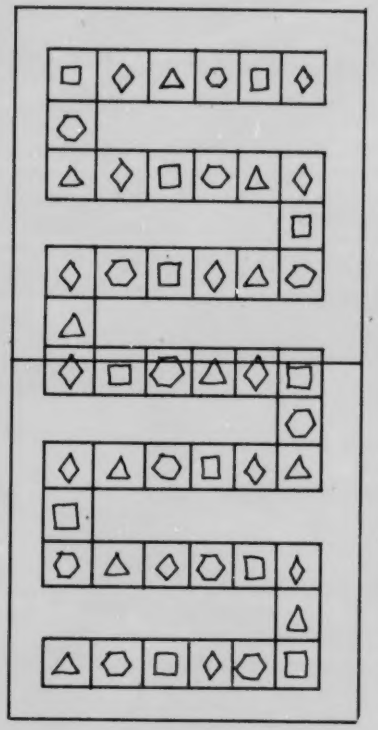


Comments

"I've found it very useful with all classes from year 2 through 6. The lower grades add the numbers, the upper grades multiply them."

"The children enjoyed using the Spinner and I can make different boards so that I am able to use it over and over again in many ways."

"For kindergarten children I found I needed to paint the arrow a brighter color for easier recognition."



PRESENTATION

This item is displayed in the Teacher Center

• at all times	• on Travelling Teacher Center Poster
for workshops only	• in Teacher Center Sampler
kept in labelled drawer	• in Teacher Center Photograph Book
sample in use	

"Let's explore the wonderful world of Spinner. What skills are you working on right now?

"Recognition of geometric shapes . . .
Initial consonant sounds . . .
Blends. . ."

"Okay, I'll take blends to start with. Slip this face onto the spinner platform so that the slot slides under the arrow. Now, who is going to help 'play' this blend activity with me . . . I need 4 or 5 players.

"Give the arrow a flick to get it spinning and see where it stops. "bl." Give a word that starts with bl?"

"Black."

"Fine, now it's your turn . . . give the arrow a spin. While the arrow is spinning let's think of the rules we want for game. I suggest that each word given be written down for all players to see. What else?"

"How about no repeats?"

"Fine, more?"

"Let's have a time limit . . . 10 seconds."

"That's okay for us, but would you want it for your class?"

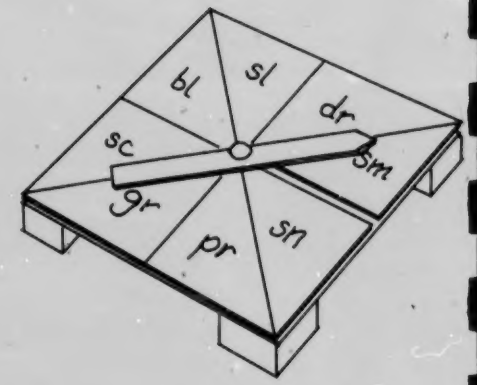
"Why not have as many words as you can give in 10 seconds?"

"Again, how do we like this and how would the kids handle it?" (In the meantime, the arrow has stopped on "cr".)

"Crayon."

"The face presents 12 different blends and should our game continue for 20 minutes we would have practiced quite a list of words. Since there are more blends than 12 (about double that number) you should decide which blends are most suitable for your students to work on as a unit. In addition, you may not want to have 12 presented at once, 6 or 8 might be a more realistic number."

"How about RULES . . . are they important?"



"We needed some for our game, but you noticed, I'm sure, that I wasn't all sure that our rules should be the ones for your classroom. Where do rules come in? Who makes them? WHY?

"I think rules are controls; what's a game without controls? Controls are boundaries or limits and they are needed to help the players keep track of what is happening. If nothing is happening, if there is no sign of movement or advancement, if there is no concern about, "Hey, that's good!" or "No, you missed it," then, there is no game. These controls must be adjustable; you want players to have a good record of successes. Some players will want stiff rules. They are ready to push themseves and to be pushed by other's achievements. For others who are less likely to have a firm grip on these skills, this game has elements of tentative risk-taking and you want to encourage them to try their partial grasp of this information. The rules should encourage them to participate as actively as possible; active participants as opposed to inactive spectators, is the goal. For the beginner or tentative player, pairs of players may be useful. After all we have learned a great deal about peer support through mixed age grouping and individualization studies and it is helpful to apply these findings.

"Here's a variation of the Spinner activity. Everyone take one of these dittoes. You have a page full of boxes and one other element . . . What is it?"

'Each box has a different blend in the upper left-hand corner."

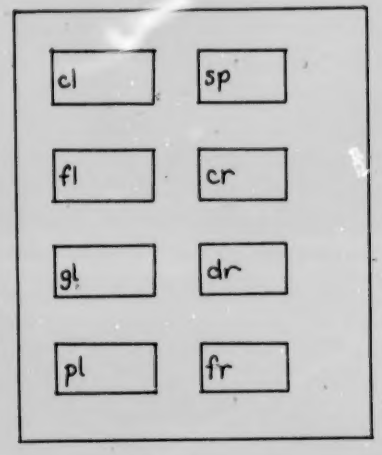
'Right. . . spin the arrow . . . match the blend it selects with the same one on your sheet. Say and then write blend words in that box. Someone else spin the arrow . . .

'What did you spin?"

"St."

"Fine. Remember people take turns spinning but with each spin everyone is active, i.e., each person tries to write 1, 2 or 3 words on his paper in the box that matches the blend. We will play for 10 minutes, check-off lists, and see how big a total list the class got. We can also give a "nickel" a word and find out who has the most nickels, etc.

"Another variation on the activity played is Lotto or Bingo. In the instance of the former, Lotto cards are passed out to each player and each player has a



supply of counters or chips. The item to which the arrow points after you spin it determines what the player looks for on his card to match and to cover up. The first player to fill his card is the winner, or, the one with the greatest number covered when the time is up is the winner. For Bingo each card used in a game should have a different array of items in order to avoid multiple winners. One simple way to obtain a random distribution on the cards is to list on the blackboard all the desired items.

"Each of you has a card marked out as a grid. Now on the board I have listed the long and short vowels and your task is to start with any one of those long or short vowels and consciously scramble the order with which you fill up your grid. For example, I chose to start with 'u' in the top left box and going across that top row of 5 boxes I alternate long and short as I move backwards u, o, i, e and a. When I finish the top row I drop down to the second row and begin on the left. I continue this until the card is completed. You might do your card vertically, another follows my pattern but begins with a different letter.

"The long and short vowel spinner face is slipped into place and now, let's give that arrow a hit. It has stopped on the word stove . . . everyone place a marker on an 'o' on his card. And so the game continues until someone's card comes up with a Bingo (5 in a row). After each spin there must be someone who records on paper for the record just what the arrow did select. Obviously, any number of players can participate and a variety of long and short vowel key words can be used on the spinner faces.

"Some teachers like to print eraser stamp pictures on the spinner face and then give out ditto sheets listing words that have the initial sound that matches one of the pictures. With each spin the children indicate the match they see. The activity continues until the whole sheet is completed.

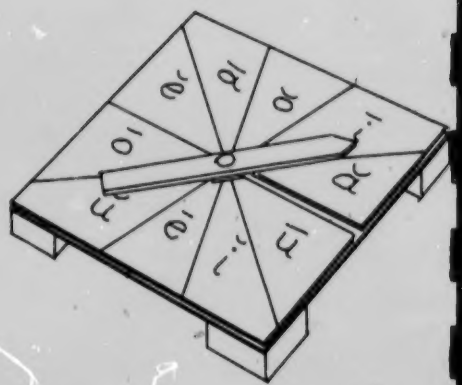
"Further variations on Spinner come from putting two (or three) together. Let's do some subtraction. On the left-hand platform I'm slipping a face which arrays numbers 11 to 20. Here on the right the face shows numbers 2 through 11. Please come up and spin both arrows. Read the subtraction example you get.

"Eighteen take away three."

"The answer is . . ."

"Fifteen."

"Great, who's next? What did you spin?"



pant	able	she
yell	FREE	wish
pine	drop	fudge

"Eleven take away two"

"The answer is . . ."

"Nine."

"Any problems with this game? Any rules?"

"How about, 'the difference (answer) is that player's points?'"

"Do you want each player to recite the example before giving an answer?"

"Maybe he should write it down and then say the answer?"

"Again, rules only have a place where they lend support to the game and to the participants."

"Is multiplication possible with two spinners? Yes, in fact the faces are easier; they could be identical. The spinners become a random example generator."

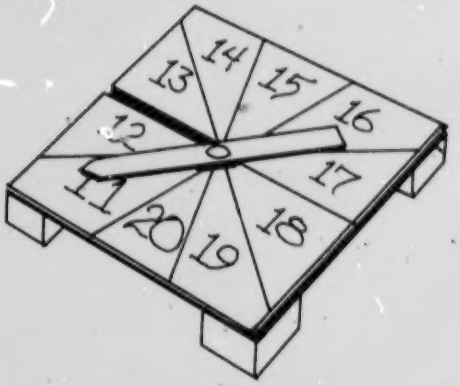
The truth is that Spinners will show you and your students everything except which way North is, and what EXIT to use when the fire alarm rings.

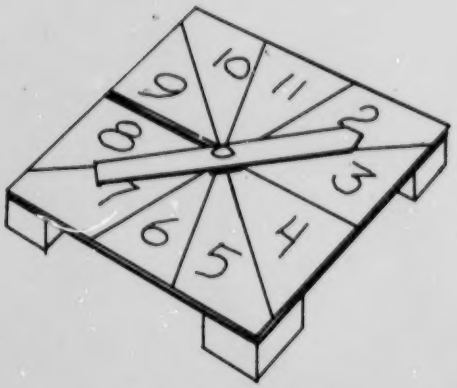
Now that everyone is making Spinners it is helpful to move from one person to another and ask such questions as, "Are there other teachers at your school who have Spinners?"

"Are there others from your school with us today?" If the answer to this question is "yes," then "Have you thought about sharing these? One of you focus on language arts and the other on math, provided the skill levels are comparable. Each face requires a few minutes to almost a half hour to complete, and each of you wants as many faces as possible."

"Storage in the room should be no problem, from a size standpoint, however, you will want to consider storage of faces as your collection grows. Do you have a file box? Can you set aside time to make one?"

"You can see how the Center's collection is filled, and the sections that are useful to us. Further, ideas are available in this SPINNER/WINNER booklet."





MAKING IT

Materials

(1) 11" x 11" Masonite (1/8")
(1) 1" x 8" Masonite (1/8")
(1) 1" x 1" Masonite (1/8")
(5) 1½" x 1½" x 3/4" pine blocks
1" x ¼" round head stove bolt
11" x 11" Railroad Board - for spinner faces
Glue
Lamin
Book tape (for game boards)

Tools

Markers
Center Marking template for spinner
Face marking templates
Drill
15/64" drill bit and 5/16" drill bit
glueing weights
eraser stamps
spring clamp

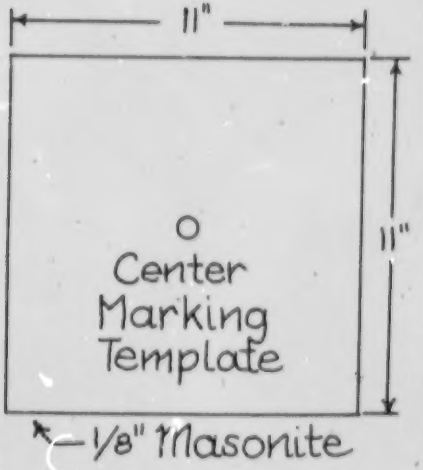
Aids to Fabrication

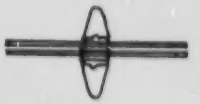
- model
- template
- pre-cut pieces
- posted instructions
- classroom use handout

How long does it take to make this item?

0-½ hour
- ½-1 hour

1-2 hours
2+ hours





Making Spinners has two very different phases. One is a simple assembly process. For the spinner platform the materials are pre-cut and the "legs" are glued (Elmer's type) onto the platform and a spacer is glued on to the center of the arrow. This glueing step requires a "drying" time while the glue sets up. During this interval the worker can begin selecting the topic which the face will represent and marking it off using the appropriate template for this purpose.

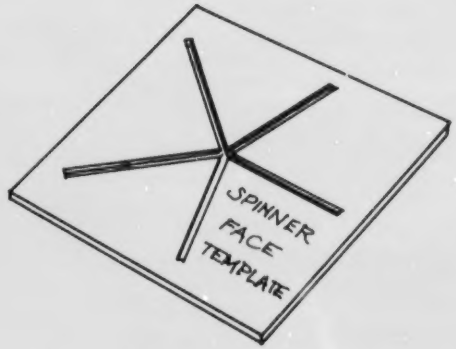
The face is an 11" x 11" piece of railroad board. This size is one we worked out to conform with the typical show card sheet which is 22" x 28". A sheet yields 4 faces plus two 6" x 11" boards which are used as is or re-cut for specific sizes. Railroad board is finished on both sides and sufficiently sturdy for this purpose.

The masonite templates are slotted with a table saw. We recommended that this slot be used with a sharp pencil to establish light guidelines on the face. The templates include 3, 5, 8, 10 and 12 sections. Once the

face is completed go over the guidelines and the edges with a broad tipped magic marker to set off the face. This then is laminated on both sides. The final step is to cut a slot along one of the guidelines. This should be approximately 3/8" wide since the face has to slip past a ¼" bolt which holds the arrow in the center of the platform.

The layout of material on the face deserves some attention. We recommend that the face be regarded as a poster, that is, there is a top and bottom, a left and right side and therefore the material is arranged as if it were on guidelines that run from left to right. This approach has benefits both in terms of looks and readability.

The main decision-making for the teacher or parent, centers around the selection of material which goes on the face, the size of letter or numerals, color preference for the face and markers, and whether adaptations are required in order to go from the models presented in the SPINNER/WINNER booklet, to the actual task put before your children. To aid in this process of selection we may have to go to additional resource books on math and language arts learning games. Here we find other ideas for addressing the same basic skills. Out of this we are able to help the participant decide just what looks most promising for his students. The overwhelming majority do find that our models do match up with their needs.



MAINTENANCE

"Spinners held up very well. Spinner cards have a tendency to curve after laminating and make it difficult to spin spinner unless they are stored with a weight on top."

"More control needed on the pointer, example; I have to hold it in place on a specific item."

CREDITS

Narrative sections by Fred Locke.

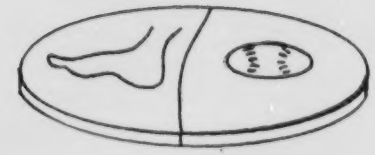
TWO PIECE PUZZLES

DESCRIPTION

A puzzle with only two pieces. Cut from a single piece of material of any shape, the two-piece puzzles become a self-checking activity with a wide variety of uses. Some examples we've seen are as follows:

- matching upper to lower case letters
- matching picture to initial sound
- making compound words
- matching math problems with answers
- matching fractions to equivalents
- matching images and descriptive words

This activity reinforces pre-learned facts when children recognize the questions and answers. It teaches new facts when children match the two shapes and then look at the question and answer.



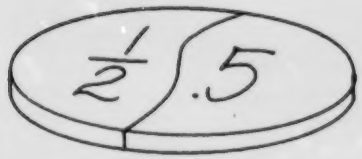
The beauty of the game is that it is self-correcting. The right answers can be consistently and infallibly "pieced together" without the teacher's assistance. Students also find that it is much faster and easier to put the pieces together using the questions as clues rather than the shapes.

Students can play the game individually or in small groups competing for the fastest assembly time.

The subjects taught are limited only in that the questions and answers must be physically small enough to fit on the puzzle pieces.

Two-piece puzzles are fun, informative and especially good in focusing and/or redirecting a student's attention.

OBSERVATIONS FROM TEACHERS AND PARENTS



Age Appropriateness
- Pre-K
- K-3
- 4-6
- All Ages

Group Size
- Individual
- Small Group
- Large Group

Suggested Classroom Use
- Language Arts
- Mathematics
- Multi-Purpose Learning Aid
- Classroom Furnishing

Maker Characteristics
- Teacher
- Aide
- Parent

"Had you planned to make this item before you came to the Center?"
- Yes
- No

"How did you decide to make this item?"
- your own idea
- display
- introduced by staff
- suggestion of co-worker
- other

"How did the staff help in the creation of your item?"
- designing
- measuring
- cutting pieces
- using tools
- finding references
- cheerleading
- someone helped me
- I did it all myself.

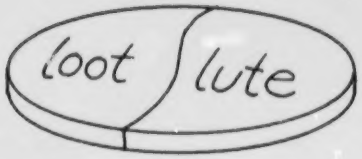
"What topic was taught with this item?"
- Upper case - lower case
- Picture - initial sound
- Numbers - numerals
- Arithmetic facts
- Alike/not alike
- Fractions
- Compound words
- Follow-up to Charlotte's Web
- Vowels - pictures for vowel sounds
- Facial expressions and feelings
- Alphabet letters and sounds
- Alphabet letters and shapes
- Homonyms, antonyms, synonyms
- Contractions
- Short and long sounds

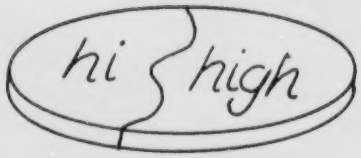
Comments

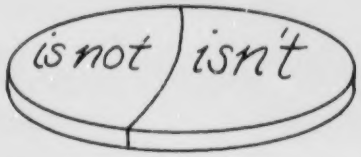
"The students found the puzzles enjoyable. They have freely chosen this activity on several occasions."

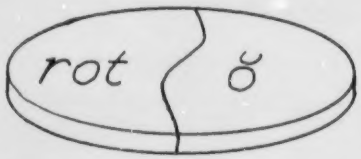
"Good motivation (manipulative). Excellent reinforcement of previously learned concepts."

"It would be nice if the children could construct their own puzzles and interchange them with fellow students."









PRESENTATION

This item is displayed in the Teacher Center:

- at all times
- for workshops only
- kept in a labeled drawer
- sample in use
- on the Travelling Teacher Center Poster
- in the Teacher Center Sampler
- in the Teacher Center Photograph Book

When two-piece puzzles are presented to a group of people, the staffer spreads a sample series face-down on a table and asks the participants to assemble them without using the question and answer clues. Then the participants are asked to reassemble the puzzle using the clues. This demonstrates the comparable ease of assembly when using the clues.

Then, the group is shown various samples of two-piece puzzles that are appropriate to their needs.

It is important to make sure that the teachers are comfortable using a small group activity in their rooms, both in terms of storage and in terms of classroom management.

We provide ziplock bags for storage of Two-Piece Puzzles.

MAKING IT

Materials
3" recycled cardboard discs
(any uniformly sized cardboard shape will do)
Magic Markers

Tools
Bandsaw or Dremel Saw
Eraser stamps (optional)

Aids to Fabrication
- model
- template
- [illegible]e-cut pieces
- [illegible]ed instructions
- [illegible]room use handout

"How long does it take to make this item?"
- 0-½ hour
- ½-1 hour
- 1-2 hours
- 2+ hours

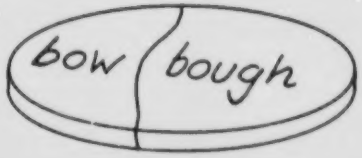
Write and/or stamp the question and answer onto opposite sides of the white face of the disc. When doing this make sure to leave room in the middle for the wavy cut.

Make sure that no two discs have the same answer.

There should be enough discs in the series to make the game challenging.

Cut the discs on the band saw. Make sure that there are no long, thin edges when cutting the discs since these tend to bend easily.

The greater the degree of variance in the shape of the cuts, the easier it is to assemble. For instance, if two discs are cut with S shaped curve, they will be more difficult to put together than one disc cut straight and the second cut with an S curve. The hardest series of discs to assemble are those in which all the discs are cut fairly straight through the middle. If the children are familiar with the material, a more difficult cut configuration is appropriate. If they are not, an easier configuration works best.



CREDITS

Narrative sections by Rich Bechtel.

RESEARCH REPORT

A RESEARCH SYSTEM AND VALIDATION OF THE EFFECTIVENESS OF TEACHER CENTER PRODUCTS

Introduction

A vital function of the Philadelphia Teacher Parent Center (PTPC), ever since its establishment in 1967, has been to help teachers and parents make and use equipment to facilitate the education of their children. Throughout the years PTPC has developed an extensive collection of learning aids, educational furniture, and effective techniques for fabricating them. Concurrently they have developed curriculum supplements, directions, and strategies for using them with children. Services are provided both in the PTPC and by the Traveling Teacher Center (TTC), which makes on-site visits to schools.

This grant enabled the staff of the Philadelphia Teacher Parent Center, in collaboration with the Office of Research and Evaluation of the School District of Philadelphia, to evaluate the selection, creation, use, effectiveness, and durability of teacher-made materials, to develop a prototypical research model, and to publish a handbook of the most successful items.

Rationale

Many teachers, parents, aides, and administrators visit the PTPC each year to participate in workshops, to explore new curricula, and to fabricate learning aids and educational furniture. Their immediate excitement with their handmade products was always evident, but many questions remained: (a) what influenced their selection of the item(s) they made, (b) in what ways did they receive support from the PTPC staff, (c) how were the items they created used in their classrooms, (d) how effective were the items, and finally, (e) were the items durable?

Although a longitudinal study of the use and durability was considered, extensive transfers and terminations of personnel within the School District in the past few years made it impossible to locate many of the teachers who had previously visited the PTPC. It was decided, therefore, to begin the effort with this year's population.

Method

The instrument development process began during the summer when the evaluation team met with the PTPC staff members to establish priorities and a schedule for the project year.

A preliminary survey (Exhibit 1) was conducted by phone to ascertain the staff's perceptions, ideas, and questions. Then all the instruments and procedures from prior years were reviewed, and the decision was made to coordinate the information to be received from the register, surveys, etc. The Visitors' Register (Exhibit 2) was revised to include user characteristics (i.e., grade, specialty area position, prior use of center). This information aided the cross validation of information recorded on the surveys.

A Teacher Center Survey Part I (Exhibit 3) was then developed to determine: (a) how products made in the PTPC and the TTC were selected and produced, (b) the extent of support visitors received from the PTPC staff, and (c) the products previously made at the PTPC. In order to keep the process as painless as possible, the long narrow form was selected to facilitate easy handling and carrying. The graphics and format were selected for attractiveness and ease in reading. Both for attractiveness and to help distinguish the surveys completed in the traveling workshops from those completed at the PTPC, the survey was printed on heavy stock in two colors.

Starting with the first PTPC workshop in September 1979, surveys were placed next to the Visitors' Register where a sign was posted to explain the purpose and procedure. However, returns were too sparse, so the staff decided to distribute the survey forms near the end of each workshop.

A Parent-Aide gave part-time assistance to tally the information from the returned surveys. Special forms were developed for this purpose (Exhibits 4a and 4b), and the tallied information was cross-validated by the evaluation team. After checking the dates and names on the returned surveys with the Visitors' Register, a follow-up survey was sent to each visitor who failed to respond during the workshop visit.

Using mid to late January as a cut-off, the Part I survey returns were then analyzed using a matrix (Exhibit 5) organized into three basic categories: learning aids, furniture, and general. The learning aids were further delineated on the matrix in terms of (a) grade level appropriateness, (b) whether appropriate for large or small group instruction, and (c) whether appropriate for math or language instruction. The matrix displayed approximately 50 different products. From this list, the 36 most frequently created items were selected for further evaluation. The use of the matrix enabled a balanced selection of the most frequently made items from all three basic categories.

Now that the most popular items were determined, it was necessary to survey the people who made these items to determine their use, effectiveness, and durability in the classroom. The Part I surveys were sorted into the 36 categories selected. Using the date on each survey, the people were located in the Visitors' Register. Each name, along with the date of visit, school, grade, and position, was entered by product category on a Master Schedule (Exhibit 6).

Simultaneously, the project staff, the evaluation team, and colleagues from the School District's Department of Instructional Research and Development worked to develop a compact and concise format for A Teacher Center Survey, Part II. Two editions of the Part II survey

were created: one for furniture (Exhibit 7) and one for learning aids (Exhibit 8).

Finally, a cover letter (Exhibit 9) and the appropriate Part II survey were sent to all teachers, aides, and parents listed on the Master Schedule for whom an address or location appeared in the Visitors' Register. When a completed survey was returned, it was entered on the Master Schedule. A follow-up mailing was completed in April.

Items that received five or more responses were examined further in terms of the effectiveness and durability ratings they received from the teachers and parent-aides. Items that were not rated effective or durable by half of the respondents were eliminated. On two occasions, item categories were combined because they were, in fact, merely variations of the same thing. This process resulted in the final selection of the seventeen (17) "Greatest Hits." The information from Part II of the survey was not only used to guide the final selection of the 17 items that appear in the "Greatest Hits" but also to give information to the PTPC staff people whose task it was to write about these items.

Sometime during the project year it was realized that some important and interesting information was not being covered. The PTPC staff expressed an interest in knowing why people come to the PTPC, how they feel about the experience, and how they feel about what they make. The staff decided to record anecdotes in an effort to answer these questions and provide interesting texture to the item descriptions. A list of "conversation starters" (Exhibit 10) was generated at a staff meeting, and a goal was set for the collection of four anecdotes per person. A card was

printed to help the staff keep a record of these anecdotes (Exhibit 11). By the end of the school year, not many anecdotes had been collected. Staff members found it difficult to split their attention during workshops between serving people and doing research.

Results

There were three major, interrelated sources of research data for the study: the Visitors' Register, A Teacher Center Survey Part I, and A Teacher Center Survey Part II.

The Visitors' Register, used in combination with the Teacher Center Survey Part I, provided a profile of maker characteristics. The maker characteristics were examined for all 36 items evaluated, the results reflected the same trends as expressed for the 17 "Greatest Hits" (Table 1). Overall, the ratio of teachers to parents/aides who made the 17 items included in the "Greatest Hits" was 1:1.33. The 17 items were divided into two basic categories for analysis--furniture (6 items) and learning aids (11 items). More pieces of furniture (N = 59) were fabricated by teachers (68%) than by parents/aides (32%). Conversely, more learning aids (N = 198) were created by parents/aides (64%) than by teachers (36%). However, both teachers (N = 111) and parents/aides (N = 146) tended, overall, to make a greater quantity of learning aids than furniture (Table 2). These data seem to reflect the intrinsic nature of the items and the makers. The fact that a larger quantity of learning aids was made may be a reflection of the larger variety of learning aids on display and available to be made in the PTPC. Further, because learning aids are smaller, and often less complex to make, visitors to the PTPC are able to complete many more in the time it takes to make

a single piece of furniture. However, the tendency of teachers to make more furniture and parents/aides to make more learning aids may be related to their functions in the classroom. Parents/aides tend to work with small groups of students and therefore recognize their need for particular materials. Teachers are responsible for the entire classroom organization as well as for instruction, so their greater tendency to make bookcases, room dividers, etc. becomes more prevalent.

There had always been some question concerning the proportion of visitors to the PTPC who actually made something, the variety of items created, and if the visitors did indeed get to accomplish their purposes in coming. The first two items on A Teacher Center Survey Part I asked visitors to list (1) "What did you plan to make or do today?" Analysis of the data revealed that teachers visiting the PTPC, on the average, planned to make 1.31 items and actually created 2.04 items (Table 3A). These data were further analyzed in terms of who "made nothing," "made exactly what planned to make," "made less than planned," "did not make what planned; made something else," and "no plans, made something" (Exhibit 3). Of the respondents to this item, 93% made either as much as they had planned to make, or more; 98% of these visitors made something (Table 3B). The responses also indicated that visitors to the PTPC made over 425 different items. Thus it was concluded that teachers did indeed accomplish their purposes in coming to the Philadelphia Teacher Parent Center.

How visitors decided to make particular items, where they got the design for the items, and the nature of assistance they received from the PTPC staff were concerns that related directly to the physical and philosophical format of the PTPC. It was hoped that answers

to questions in each of these areas would help the PTPC staff understand (and modify, if necessary) the effect of the Center's physical arrangement and staff input on visitors' decisions. The exact wording of the three items on the Survey Part I relating to decision, design, and staff involvement can be found in Exhibit 3. The responses to these items were summarized two ways: first, all responses received from the PTPC and the Traveling Teacher Center surveys were summarized for all the items created, then a second summary was made of responses relating only to the 17 "Greatest Hits" items (Table 4). Both summaries show a similar proportion of responses for each category, so the conclusions stated here apply to both summaries, but the statistics are quoted from the summary of the 17 "Greatest Hits" items. Although many of the items made were the participant's own idea (18%), most people had staff assistance in their decision-making, either through a PTPC display (26%) or because they were introduced to the item by a staff member (16%).

Design decisions were chiefly made with PTPC staff input through books and displays (13%), use of a staff-made template (9%), or use of a staff design (32%). The staff involvement question received the most rewarding responses. Participants received staff help in the creation of their items in the following ways: designing (13%), measuring (23%), cutting pieces (28%), using tools (28%), finding references (5%), and "cheerleading" or encouragement (5%). Seven percent (7%) of the items were made with help from someone else, and 10% were made "all by myself." The PTPC staff members were very pleased that the amount of staff help participants recognized and reported was comparable to the amount of help the staff had hoped they were providing.

As previously mentioned, Part I survey information (concerning the items actually made by the participants) was analyzed using a matrix, and the resulting information helped determine to whom Part II surveys would be sent. A summary of how many people made each item, how many were sent the Teacher Center Survey Part II, and how many completed surveys were returned appears in Table 5. Sometimes people reported making several of the items selected for further evaluation. Because the staff did not want to send anyone more than one Part II survey, only one of the items they made was selected for evaluation. Also, some visitors failed to indicate a location to which a survey could be sent. Therefore, the number of surveys sent for an item may be smaller than the number of people who actually made that item. Approximately half (48%) of the people who made items were sent A Teacher Center Survey Part II. More than 60% of those surveyed responded.

All participants who received the Survey Part II, were asked "How effective was this item in helping you to better organize, prepare, and present your instructional activity?" Of the 130 teachers surveyed who made learning aids, 89 (69%) found the items "very effective," 40 (31%) found the items "somewhat effective," and no one found the items "not effective." Of the 49 teachers surveyed who made furniture, 43 (88%) found it "very effective," 5 (10%) found it "somewhat effective," and 1 (2%) found it "not effective" (The teacher who found her furniture "not effective" stated in her comments that she tended to overload it and it eventually collapsed). Learning aids were reported to be "very effective" in "helping students learn what was taught" by 94 (72%) of the teachers; 36 teachers (28%) rated them as "somewhat effective:" and no one rated learning aids "not effective." When teachers who made furniture were asked: Does this item "contribute to your students' learning process?" 36 said "Yes,"

ll said "No," and two people did not respond (Table 6). These numerical results do not reflect some of the interesting comments the respondents offered. On several occasions, different teachers' responses indicated that they each taught the same topic with a learning aid. They each described the same instructional activity in which the item was used, and even their comments said the item was very effective in teaching that skill. However, these same teachers gave the item different effectiveness ratings on the scaled survey item. Similarly, teachers who made the same item of furniture would have different ideas of what made the item contribute to the students' learning process. One teacher said "Yes" her organizer contributed in that it made materials more readily available to her; another teacher rated the item "No," then offered a similar comment about availability of materials. It is important that these differences in teachers' perceptions be considered when reviewing the numerical results.

Three interrelated questions were asked about the durability of each of the items created. The questions asked how many times the item was used, how many times it was repaired, and what was the current condition of the item. It was hoped that responses to these items would give the PTPC staff an indication of which items, if any, were not actively used in the classrooms or were falling apart under limited use. Responses (N = 142) indicated that 41% of the learning aids received the highest rating, i.e., they needed no repairs and were showing only the normal wear. Seventy-nine percent (79%) of the learning aids needed no repairs and showed normal wear, regardless of how often they were used. Only 13% of the learning aids needed any repairs at all (Table 7). Responses indicated that 71% of the furniture (N = 49) was used continuously, yet

needed no repairs and showed normal wear. Only 16% of the furniture needed any repairs at all (Table 7). Upon examination of the durability data for all the products, there seemed to be no important relationship between the amount of use items received and the number of repairs they required. For a vast majority of items, wear was normal and repairs were few, if any.

SUMMARY AND CONCLUSIONS

The Philadelphia Teacher Parent Center project was developed to address specific questions about products made in the Center by teachers, parents and aides, to develop a prototypical research model, and to publish a handbook of the most successful products. Questions pertaining to the products included (a) did visitors make what they planned during the visit to the center (b) how did visitors to the PTPC decide to make an item, (c) what was the source of the design for an item (d) how did the staff help in the creation of the item, (e) how was the item used, (f) was the item effective, and (g) was the item durable.

The handbook, "A Teacher Center's Greatest Hits," is a direct product of the combined efforts of the PTPC staff and the research team. A compilation of all the forms and instruments developed for the research model follows this report.

There were three major interrelated sources of research data for this study: the Visitors' Register, A Teacher Center Survey Part I and A Teacher Center Survey Part II. The Visitors' Register, used in combination with the Teacher Center Survey Part I, provided a profile of maker characteristics. The Part I survey

examined staff involvement and the selection and design process. The results were used to determine which items created in the Center would be evaluated further using the Part II survey. Approximately half the people who made the selected items were sent A Teacher Center Survey Part II. This final survey (Part II) provided information on the use, effectiveness, and durability of the items.

It was found that visitors to the PTPC, on the average, created more items than they had planned. Although many of the items created were the participant's own idea, most people had staff assistance in their decision-making process. Design decisions were chiefly made with PTPC staff input. Participants reported a very high level of PTPC staff help in the creation of their items.

Both furniture items and learning aids were found to be very effective by a majority of respondents in helping teachers to better organize, prepare, and present their instructional activity. Learning aids were rated as very effective in helping students learn what was taught, and a majority of teachers felt that the furniture they created did, indeed, contribute to the students' learning process.

Products made in the Philadelphia Teacher Parent Center were also found to be very durable. Most products required no repairs and showed only normal wear even though they received heavy to continuous use in the classroom.

This research effort gave concrete answers to many questions the PTPC staff could previously only surmise. The staff thought teachers were using the items in their classrooms, but they never realized how many creative uses teachers had developed for the items until the survey

responses were collected. The PTPC staff was also gratified that the responses acknowledged the variety of ways help is offered to visitors.

It is the opinion of the research team that this project exemplified the ideal relationship that can exist between a project staff and a research team. The expertise of both groups melded to produce a practical product based on scientifically researched information.

EXHIBITS

1. Preliminary Staff Inquiry
2. Visitors' Register
3. A Teacher Center Survey Part I
4. Summary Forms
   A. Frequency for Items 1 and 2
      Composite of 1 and 2
   B. Decision, Design, Staff Involvement
5. Matrix
   A. Items Suitable for Use with Whole Class
   B. Items Suitable for Small Groups
   C. Furniture/General
6. Master Schedule for Part II Survey
7. A Teacher Center Survey Part II - Furniture
8. A Teacher Center Survey Part II - Learning Aids
9. Cover Letter for Part II Survey
10. Conversation Starters
11. Anecdote Cards

EXHIBIT 1

TEACHER CENTER PROJECT EVALUATION

PRELIMINARY STAFF INQUIRY

JULY 1979

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1. What are the most frequently made items?

2. What do you think are the best items? Define your criteria.

3. Are you familiar with any research on the effectiveness of educational materials? Is there anyone we should contact for information?

4. What are the tough questions? What do we have to ask to learn something new?

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EXHIBIT 2

REGISTER

Philadelphia Teacher Parent Center, E.S.E.A. Title I

Name	Date	Time	School or Program (If parent, list school attended by children)		First visit this year? (✓)	Today's Visit (Check One)		Your Position (Parent, Teacher, Aide, etc.)	Grade or Specialty Area (Please List)
			District #	School		Planned Workshop	Personal Visit		

EXHIBIT 3

WHAT DID YOU MAKE?

A Teacher Center Survey
Part 1

Name _____ Date _____

Please Help Us!

We have been awarded a research grant to evaluate items made at the Teacher Center and its traveling workshops. The result of this effort will be a published booklet for national distribution to teachers, parents, and other teacher centers.

1. What did you plan to make or do today?

   1. _____ 2. _____

2. What item(s) did you actually make today? (Please use the number next to each item you list here when answering questions.)

   1. _____ 3. _____
   2. _____ 4. _____

3. How did you decide to make today's item(s)? (Please use item number from above)

   ____ your own idea
   ____ display
   ____ introduced by staff
   ____ suggestion of coworker
   ____ other (please specify) _____
   _____

(Over, Please)

4. Where did you get the design for today's item(s)? (Please use item number from question 2.)

   ____ designed it yourself
   ____ books and displays
   ____ adaptation of commercial item
   ____ used template
   ____ staff designed
   ____ other (please specify) _____
   _____

5. How did the staff help in the creation of your item(s)? (Please use item number from question 2.)

   ____ designing
   ____ measuring
   ____ cutting pieces
   ____ using tools
   ____ finding references
   ____ cheerleading
   ____ someone else helped me
   ____ I did it all myself!

(Answer question 6 if this is your first visit to the Teacher Center this year.)

6. What items have you made at the Teacher Center in visits prior to this year? List item(s) and approximate date. Please be specific (e.g., Two Piece Puzzles)

   _____
   _____
   _____
   _____
   _____
   _____

7. Suggestions and criticisms are welcomed!

Thank you for helping us!

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EXHIBIT 4A

FREQUENCY FOR ITEMS 1 AND 2

	0	1	2	3	4 or more
Items Planned					
Items Created					

COMPOSITE OF #1 AND #2

made nothing	
made exactly what planned to make	
made less than planned	
made what planned and more	
did not make what planned; made something else	
no plans, made something	

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EXHIBIT 4B

	Area	Decision					Design						Staff Involvement							
Items Created	Frequency	own idea	display	intro staff	co-worker	other	self designed	books/displ.	adapted	template	staff design	other	designing	measuring	cutting	tools	references	cheers	someone	myself

EXHIBIT 5A

ITEMS SUITABLE FOR USE WITH WHOLE CLASS

	Mathematics	Language Arts
K-3	Before and After Clock Calendar Hundreds Board	Word Generator Letters
4-6	Fraction Sticks	Rubber Stamps Story Starters

EXHIBIT 5B

ITEMS SUITABLE FOR SMALL GROUPS

	Pre-K	K-3	4-6
Mathematics	Blocks Bingo Cards Number Button-Up Pegboards Number Snake Number Puzzle	Multiplication Cards Domino Bingo Sum-it-Up Centimeter Ruler	Multiplication Tic-Tac-Toe
Language Arts	Puzzles	Roll-a-Word Blendo Alphabet Snake Contraction Action	Compound Word Match Homonyms/Antonyms

EXHIBIT 5C

FURNITURE

Organizer
Bookcase
Chair
Room Dividers
Toy Chests
Cubbies
Carrels
Display Racks
Bulletin Boards
Doll Houses
Puppet Stages
File Box

GENERAL

Two Piece Puzzles
Laminating
Spinners
Name Tags
Christmas Decorations
Color Words
Blocks, Cubes, Dice
Workbooks
Swan Note Holder
Picture Chart
Posters
Hall Passes
Marker Holders
Card Games
Game Boards

EXHIBIT 6

SUBJECT TOY CHEST

NAME	DIST. #	VISIT DATE	GRADE	POSITION	SCHOOL	SENT	REC'D	FOLLOW UP
SANDRA MULUNS		11/7		Parent	Not Available			
KIM D. HAMMOND	4	11/8	Res.	T	CLEVELAND	✓	✓	
RUTH PECHEZC	5	12/13		Parent	FERGUSON	✓	Not at Ferg.	
RENAY JOHNSON		12/15	PreK	T	GREEN TREE	✓		✓
VALERIE WILLIAMS	2	11/28		T	REYNOLDS	✓		✓
B. M. McPHAIL	2	11/20		AIDE	STANTON	✓	✓	
CHERYL HARDY	2	11/28		T	REYNOLDS	✓		✓
FAYE THOMAS		11/14		PARENT	Not Available			
CAROLYN MORRISON	8	11/9	K	T	FORREST	✓		✓
JIM STURNIOLO		11/8		Parent	ST. BONAVENTURE	✓		✓
DORCAS PITTS	2	11/7		Parent	REYNOLDS	✓		✓
T=5 A=1 P=5						9	2	6

WHAT DID YOU MAKE?

A Teacher Center Survey
Part 2

NAME _____ ITEM _____ DATE _____

USE AND EFFECTIVENESS

Directions: Briefly describe and evaluate how you used this item in your classroom. Use the example below as a guide for your responses.

EXAMPLE

Ms. Smith built a Bookcase for her classroom.

1) In column (A) under 'classroom use' she wrote, "I stored books, games and reading materials on the bookcase".

2) In column (B) she checked "somewhat effective" and listed several problems with the bookcase in the Comments Section (D), (e.g., "shelves were too narrow").

3) In column (C) she checked "Yes" and wrote, "Because the materials were more accessible the students used them more often."

A) How did you use this item in your classroom?

_____

_____

_____

B) How effective was this item in helping you to better organize, prepare and present your instructional activity?

____ very effective

____ somewhat effective

____ not effective

C) Does this item contribute to your students' learning process?

____ Yes

____ No

If Yes, How? _____

_____

D) It is important for the Teacher Center staff to learn what comments, criticisms, or suggestions you might have regarding the use of this item. Please note them here.

_____

_____

DURABILITY

A) Check the statement that tells how many times you have used this item.

____ 0-5

____ 6-10

____ 11-20

____ continuous use

B) Check the statement that tells how many times you have repaired this item.

____ 0

____ 1

____ 2-3

____ 4 or more

C) Check the statement that best describes the item's current condition.

____ It is showing normal wear and tear

____ It is in fair condition

____ It is in poor condition

____ It has fallen apart

D) If any part of the item has needed repair, please tell us about it (be specific).

_____

_____

_____

Thank You!

WHAT DID YOU MAKE?

A Teacher Center Survey
Part 2

NAME _____ ITEM _____ DATE _____

USE AND EFFECTIVENESS

Directions: Briefly describe and evaluate how you have used this item in your classroom. Use the example below as a guide for your responses.

EXAMPLE

Mrs. Jones constructed a set of tangrams.

1) In column (A) under "what topic was taught..." she wrote "taught fractions."

2) In column (B) she described her instructional activity as follows, " I asked the children to find all the shapes that were halves of others."

3) In column (C) Mrs. Jones judged the tangrams to be "somewhat effective" in helping her to better organize and prepare her instructional activity.

4) In column (D) she rated the tangrams as "very effective" in helping her students learn fraction concepts.

A) What topic was taught with this item?

_____

B) Describe the instructional activity in which this item was used.

_____

_____

_____

C) How effective was this item in helping you to better organize, prepare and present your instructional activity?

____ very effective

____ somewhat effective

____ not effective

D) How effective was this item in helping students learn what was taught?

____ very effective

____ somewhat effective

____ not effective

5) It is important for the Teacher Center staff to learn what comments, criticisms, or suggestions you might have regarding the use of this item. Please note them here.

_____

_____

DURABILITY

A) Check the statement that tells how many times you have used this item.

____ 0-5

____ 6-10

____ 11-20

____ continuous use

B) Check the statement that tells how many times you have repaired this item.

____ 0

____ 1

____ 2-3

____ 4 or more

C) Check the statement that best describes the item's current condition.

____ It is showing normal wear and tear

____ It is in fair condition

____ It is in poor condition

____ It has fallen apart

D) If any part of the item has needed repair, please tell us about it (be specific).

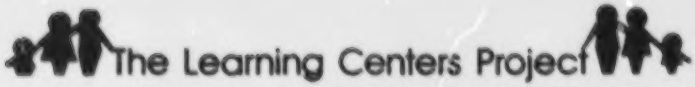
_____

_____

_____

Thank You!

EXHIBIT 9



February 27, 1980

Dear

Earlier this year you were kind enough to fill out a "What Did You Make?" card for the Philadelphia Teacher Parent Center.

The information that we got from that card and others, indicates that you made an item which is popular enough to deserve consideration for inclusion in a "cookbook" of teacher and parent-made instructional aids

We need your help once again. Your cooperation in filling out the enclosed questionnaire will help our staff make its final evaluation of the effectiveness, applicability, and durability of the item you made. Please take a moment to fill out this form.

The final "cookbook", to be distributed to teachers' centers around the country, will include approximately 20 items. They will be selected on the basis of our two surveys, staff evaluations, and on-site observations. Learning aids will cover a spectrum of age and curriculum appropriateness. Some furniture items will also be included.

We sense that this "cookbook" will be of real value to many teachers. Your assistance in helping us with this project is deeply appreciated.

Sincerely,

Sandy Caesar
Philadelphia Teacher-Parent Center

Bill Loue
Office of Research and Evaluation

/rrd

[illegible] and Lombard Streets, Philadelphia, Pennsylvania 19146 215 732-3394

A Title I facility of the School District of Philadelphia: learning laboratories and a resource center offering teacher/parent in-service, on-site consultation and opportunities for exploration and creation of educational materials.

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EXHIBIT 10

THE SCHOOL DISTRICT OF PHILADELPHIA

MEMORANDUM

TO	NAME AND OFFICE Teacher Parent Center Staff	FILE NO. 174
		DATE December 3, 1979
FROM	NAME AND OFFICE Lisbeth Sklar	SENDER'S TELEPHONE 299-7753
SUBJECT	Anecdotes	

Here is the list of "conversation starters" we came up with at the last staff meeting to help draw anecdotal information from Teacher Center Visitors:

- Do you come here often or is this your first visit ?
- How did you hear about the Center?
- Have you done the activity you're now doing before?
  (if "no") - How do your students respond to doing something new?
  - Is the response predictable?
  - How do you feel about it?
- Have your ever brought a friend with you to the center?
- Why did you come back?
- Do you find this place confusing?
- Do you find this place overcrowded?
- How did you focus (your attention) and select an activity?
- Why do you come here on your free time for no pay?
- Did other people have to make arrangements so that you could come? (e.g., babysitting)
- Did you see any changes in your classroom learning environment because of the furniture or learning activity you made here?
- Did you see any more enthusiasm and action?

We also discussed using photographs to start conversations.

LS/rrd

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EXHIBIT 11

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
FEDERAL EVALUATION RESOURCE SERVICES

PHILADELPHIA TEACHER PARENT CENTER
ANECDOTAL LOG 1979-1980

DATE _____ GRADE ____ RECORDER _____

ITEM CREATED _____ PARTICIPANT _____

Durham Center ____ Traveling Center ____

_____

_____

_____

_____

_____

TABLES

1. Maker Characteristics: A Comparison Between the 17 "Greatest Hits" and the 36 Items Evaluated by the Part II Survey.

2. "Greatest Hits" Maker Characteristics.

3A. A Categorization of People According to the Number of Items They Planned and Created.

3B A Comparision of Items Created and Items Planned.

4. A Tabulation of the Decision, Design, and Staff Involvement Associated with Items made at the PTPC.

5. A Description of the Number of Surveys Sent and Returned.

6. Teacher Center Product Effectiveness.

7. Durability of Furniture and Learning Aid Items Included in the Handbook.

TABLE I

MAKER CHARACTERISTICS
A COMPARISON BETWEEN THE 17 "GREATEST HITS"
AND THE 36 ITEMS EVALUATED BY THE PART II SURVEY

	GREATEST HITS ITEMS		PART II SURVEY ITEMS	
	N	%	N	%
Proportion of Teachers Making Furniture	40	36%	61	42%
Proportion of Parents/Aides Making Furniture	19	13%	35	14%
Proportion of Teachers Making Learning Aids	71	64%	83	58%
Proportion of Parents/Aides Making Learning Aids	127	87%	216	86%
Proportion of Furniture Made by Teachers	40	68%	61	64%
Proportion of Furniture Made by Parents/Aides	19	32%	35	36%
Proportion of Learning Aids Made By Teachers	71	36%	83	28%
Proportion of Learning Aids Made By Parents/Aides	127	64%	216	72%
Proportion of All Items Made By Teachers	111	43%	144	36%
Proportion of All Items Made By Parents/Aides	146	57%	251	64%

TABLE 2

"GREATEST HITS" MAKER CHARACTERISTICS

ITEM	TEACHERS	PARENTS/AIDES
Bookcase	7	5
Organizer	13	4
Carrel	4	0
Room Divider	5	5
Cubby	8	2
File Box	3	3
Total Furniture	40 (68%)	19 (32%)
Color Word	1	15
Blocks, Dice, etc.	6	24
Rubber Stamp	4	3
Calendar	2	10
Bingo	4	14
100's Board	Maker Characteristics were not reported for this item	
Laminating	21	8
Spinners	15	17
Compound Word Match	1	14
Two Piece Puzzle	13	5
Clocks	4	17
Total Learning Aids	71 (36%)	127 (64%)
GRAND TOTAL	111 (43%)	146 (57%)

TABLE 3A

A CATEGORIZATION OF PEOPLE* ACCORDING TO THE NUMBER OF ITEMS THEY PLANNED AND CREATED

	0	1	2	3	4 or More
ITEMS PLANNED	294 (16%)	780 (44%)	620 (35%)	47 (3%)	44 (3%)
ITEMS CREATED	36 (2%)	678 (38%)	535 (30%)	250 (14%)	286 (16%)

*N = 1785

TABLE 3B

A COMPARISON OF ITEMS CREATED AND ITEMS PLANNED

COMPARISON	N	%
Made Nothing	36	2%
Made Exactly What Planned To Make	909	51%
Made Less Than Planned	89	5%
Made What Planned and More	356	20%
Did Not Make What Planned; Made Something Else	111	6%
No Plans, Made Something	284	16%

TABLE 4

A TABULATION OF THE DECISION, DESIGN, AND STAFF INVOLVEMENT
ASSOCIATED WITH ITEMS MADE AT THE PTCP

	Total (# of items made)	DECISION: How did you decide to make today's item(s)?					DESIGN: Where did you get the design for today's item(s)?						STAFF INVOLVEMENT: How did the staff help in the creation of your item(s)?							
		own idea	display	intro. staff	co-worker	other	self designed	books/display	adapted	template	staff design	other	designing	measuring	cutting	using tools	references	cheerleading	someone else	myself
GENERAL SUMMARY																				
N	3779	723	1058	752	241	95	355	564	121	306	1295	57	617	904	1136	1069	251	194	228	489
%*		19	28	20	6	3	9	15	3	8	34	2	16	24	30	28	7	5	6	13
GREATEST HITS																				
Furniture N	397	100	96	80	58	20	27	40	17	68	192	4	116	217	169	140	11	38	39	27
Learning Aids N	1204	184	324	170	69	18	77	167	48	84	314	12	100	147	281	301	75	40	65	138
Total N	1601	284	420	250	127	38	104	207	65	152	506	16	216	364	450	441	86	78	104	165
%*		18	26	16	8	2	7	13	4	9	32	1	13	23	28	28	5	5	7	10

*Note: In each column under Decision, Design, and Staff Involvement, all percentages are independently calculated based upon the number of responses in that area and the Total number of items made.

TABLE 5

A DESCRIPTION OF THE NUMBER OF SURVEYS SENT AND RETURNED

	NO. MADE ITEM (MATRIX)	SENT SURVEY PART II		PART II SURVEYS RET'D	
		N	%	N	%
Bookcase	34	15	44%	9	60%
Organizer	52	23	44%	12	52%
Carrel	7	4	57%	4	100%
Room Divider	15	12	80%	8	67%
Cubby	12	10	83%	7	70%
File Box	8	6	75%	6	100%
Total Furniture	128	70	55%	46	66%
Color Word	27	17	63%	14	82%
Blocks, Dice, etc.	55	31	56%	18	58%
Rubber Stamp	30	10	33%	7	70%
Calendar	13	13	100%	6	46%
Bingo	35	16	46%	13	81%
100's Board	10	10	100%	4	40%
Laminating	72	31	43%	17	55%
Spinners	50	32	64%	18	56%
Compound Word Match	45	14	31%	12	86%
Two Piece Puzzle	105	22	21%	14	64%
Clocks	33	24	73%	15	63%
Total Learning Aids	475	220	46%	138	63%
GRAND TOTAL	603	290	48%	184	63%

TABLE 6

TEACHER CENTER PRODUCT EFFECTIVENESS

ITEM	TEACHERS/AIDES			STUDENTS-LEARNING AIDS			STUDENTS FURNITURE		NO
	V*	S	N	V	S	N	YES	NO	Response
Bookcase	9	0	0				8	1	0
Organizer	10	4	0				8	5	1
Carrel	4	1	0				4	0	1
Room Divider	6	0	1				6	1	0
Cubby	8	0	0				7	1	0
File Box	6	0	0				3	3	0
Total Furniture	43(88%)	5(10%)	1(2%)				36(74%)	11(22%)	2(4%)
Color Word	12	3	0	14	1	0			
Blocks, Dice, etc.	11	9	0	11	9	0			
Rubber Stamp	6	0	0	5	0	0			
Calendar	4	2	0	4	2	0			
Bingo	5	4	0	6	3	0			
100's Board	3	1	0	3	1	0			
Laminating	13	2	0	13	2	0			
Spinners	10	4	0	10	6	0			
Compound Word Match	8	4	0	10	2	0			
Two Piece Puzzle	8	5	0	8	5	0			
Clocks	9	6	0	10	5	0			
Total Learning Aids	89(69%)	40(31%)	0	94(72%)	36(28%)	0			

* V=very effective, S=Somewhat effective, N=Not Effective

TABLE 7

DURABILITY OF FURNITURE (F) AND LEARNING AID (LA) ITEMS INCLUDED IN THE HANDBOOK

No. Of Times		CURRENT CONDITION							
		NORMAL WEAR		FAIR		POOR		FALLEN APART	
Used	Repaired	F	LA	F	LA	F	LA	F	LA
0-5	0	1	15						
	1		1						1
	2-3								
	4 or more								
6-10	0	2	18		2		1		
	1		1		1				
	2-3		1						
	4 or more								
11-20	0	1	20		1				
	1	1	2		1				
	2-3								
	4 or more		1						
Continuous	0	35	58	1	10	1			
	1	2	4	1	2				
	2-3	1			2				
	4 or more	1			1				1

APPENDICES

ALMOST EVERYTHING MADE

Abbreviation
ABC Blocks
ABC Cards
ABC Stamps
Acetate Pictures
Acetate Rulers
Activity Cards
Addition Practice
Alphabet Disc Game
Alphabet Game Board
Alphabet Game (Misc.)
Alphabet Snake Puzzle
Animal Cage
Answer Board
Antonym Discs
Balance Beam
Balance Scales
Ball Carrier
Balloon Game
Banners
Barrel Chairs, Stools & Benches
Basic Facts
Bean Arrangement (For hanging)
Beginning Sounds
Believe It or Not
Bingo (Blends)
Bingo (Cards)
Bingo (Day by Day)
Bingo (Decimal Game)
Bingo (Money)
Bingo (Phonics)
Bingo (Value)
Bird Feeders
Birds
Birthday Cake
Blocks
Blocks (Numbers)
Blocks (Prints)
Blocks (Sentences)
Block Tumble
Body Part Game
Boggle Game
Bookcase
Bookcover
Book Ends
Booklets (Practice kind)
Book Making
Book Rack
Bookshelves
Book Stand
Bottle Game (Math)
Boxes
Boy Figure
Brain Teasers
Bulletin Board
Bulletin Board (Tens & unit)
Buttons (Fraction)
Button Up
Card Game
Card Holder
Carols
Carrels
Carrying Cage for Hermit Crab
Cars
Centimeter Rulers
Chair
Charts Shapes
Child Arrow
Child's Desk Set
Child's Form
Child's Psych. Grid
Chinese Tangrams
Choice Board
Christmas Wreaths
Classifying Pictures and Words
Clocks
Closet
Clown (Math)
Clown Target
Coin Cards
Coin Game
Coin Stamps
Collage from Beans & Rice
Color Card (Words & names)
Color Chart
Color Circles
Color Kit
Color Game
Color Wheel
Color Words
Compound Word Match
Compound Words
Compute These
Concentration Card Games
Concentration (Math)
Consonant Chart
Contraction Action
Counter (Money)
Counting (Picture)
Count Up High
Cover Up (Math)

Cradle
Crayon Holders
Cubbies
Cubes
Cubic Meter
Cut Up Clothes Pins
Cut Up Plastic Jars
Dark Room
Day of Week Board
Desk
Desk Drawers
Desk Shelf
Dial-a-Vowel
Dial-a-Wheel
Dice Game
Digraph Game
Dilemma Disc
Dimes and Pennies
Disc Cards
Disc (Drilled holes)
Disc Game
Discs (Money)
Dispenser
Display Holders
Display Rack
Ditto Animals
Divider Slide Game
Dividers (Room)
Division Disc
Division Slider
Doll Beds
Doll House
Dolls
Dominoes
Door Cover
Drill Cards
Drymounting
Ducks
Duplicating Machine (Copies)
Easel
Easter Baskets
Egg Cartons (Fractions)
Eraser Stamps
Even Numbers (On disc)
Exhibit Display Stand
Faces
Felt Board
File Box
File Cabinet
Files
Fill-in-Blank
Fishing Rods
Flannel Board
Flash Cards (Math)
Flower Planter
Folder Holder
Folders
Folding Bulletin Board
Food Group Cards
Fraction Bars
Fraction Game
Fraction Puzzle
Fraction Strips
Frames
Furniture for Hamster
Game Board
Games (Mixed)
Game Sheets
Gas Station
Geoboard
Geometry Game
Gingerbread House
Girl Figure
Glued Pictures
Graduated Numbers
Graph Chart
Hall Passes (Disc)
Hamster Cage
Handwriting Chart
Hearts Design
Hockey Sets
Holiday Turkey
Home Packet
Homonyms and Antonyms
Hook Board
Horse
How Many
Hundred Board
Independent Activities
Infant Seat
Initial Consonant Game
Initial Sound Activity
Insect Cage
Instructional Material
Krypto Cards
Lamination
Language Arts Activity
Language Games (Misc.)
Learning Center Tree
Legs for Table
Let's Play Ball
Letter Puzzles
Letters (Small & large)
Letter Stamps
Library
Light Box with Board
Linoleum Cut
Listening Lotto
Looms
Luck Wheels
Lunch Trays
Magazine Stand
Magic Prop
Mail Box
Markers Holder
Marionette Pieces
Mask
Matching Cards
Matching Circle Segments
Match-Up
Mobile
Money Coins
Money Puzzle

Money Stamp Sp ers
Money Wipe Off
Monster Match (Math)
Movable Cart
Multiplication Cards
Multiplication Match
Multi-Purpose Unit
Music Box
Mylar Bits
Name Cards
Name Snake
Name Tag (Disc)
Newsletter
Newspaper (Game)
Night Stand
Note Holder
Nouns
Nouns Adjectives Game
Now You Have It-Now You Don't
Number Blocks
Number Board
Number Chart and Shapes
Number Cards
Number Counter
Number Count (Felt)
Number Discs
Number Generators
Number Land
Number Puzzles
Number (Proportioned)
Number (Sewing)
Numbers for 1st Grader
Number Stamps
Number Tumble
Number Wheel Game
Number Workers
Number Worm
Numerals Facts
Odd and Even Board
Organizer
Packets of Work
Painting
Paper Holders and Dividers
Paper Organizer
Paper Place Mats
Patch Game
Patterns (Jack-in-the-Box)
Peg Board
Pegs
Pencil Holders
Phonics Arrow
Phonics Flash Cards
Phonics Tumble Game
Picture Chart
Picture (Cut out)
Picture Dictionary
Pin Wheel Words
Place Mats
Place Value Bars
Planted Seeds
Planter Box
Plant Stand
Plaques
Platform
Playground for Hamster
Play House Pattern
Playing Cards (Word game)
Play Stove
Pocket Charts
Pool Rack
Pool Table
Poster Game
Posters
Practice Test Sheets
Pull Pony
Puppet Backings
Puppets
Puppet Stage
Puzzles
Rabbit
Rain Puddles
Reading Center & Listening Center
Reading Game
Refills
Refinished Old Picture
Remainder Game
Rhyme Word Game
Ring Board
Ring Toss (Disc)
Risk It
Roll-a-Word
Roman Numerals
Root Box
Rope the Cowpoke
Sandpaper (Numeral cards)
Science Game
Scrambled Word Cards
Scrapbook
Seek and Find
Sentence Blocks and Cards
Sentence Game
Sentence Structure Board
Sequence Stories
Sequence Strips
Shamrock
Shapes Chart
Shapes (From tubes)
Shoe
Shoe Box Activities
Shuffle Board
Silly Sounds
Single Letters (Blocks)
Slides
Snake (Number)
Snake Puzzle
Snowball Sound Game
Snowflake Stamps
Soma Cubes
Sound Cards and Books
Space Extender
Speed Board
Spelling Game
Spinner Faces

Spinners (3-Way)
Spinners
Sports Equipment and Rack
Stage Flats
Stamp Pad Set
Stamp Picture Cards
Star Multiplier
Stencils
Stools
Storage Box
Storage Cabinet
Storage Chest
Store
Store Counter
Story Starter
Styrofoam Peanut Decorations
Subtraction
Suffix Cards
Sum-It-Up
Super Six Man
Swans
Synonym Word Game
Table Board
Table Cover
Table Divider
Table Game
Table (Triwall)
Tactile Wheel
Take 15
Tangrams
Television Set
Template
Test Helpers
Test Practice Catalog
The Winning Touch
Tic-Tac-Toe (Multiplication)
Tiles
Touch Name
Toy Chest
Toy Freezer
Toy Money
Toy Stand
Tracers
Transparency
Trays
Tree
Triangles
Triwall Boxes
Triwall Rocket Ship
T-Slide (Multiplication drill)
T-Strips
Tug-o-War
Turning Wheel
Twins
Two-Piece Puzzles
Two Time Game
Valentine Hart Task Game
Verb Blocks
Verb Box
Vision Stim. (Pictures)
Vocabulary (Circle game)
Vowels Chart
Vowels Spinner
Vowels Sticks
Wall Plaque
What Meets the Eye
Who Has (Math)
Wooden People
Word Bingo
Word Blocks
Word Board
Word Box
Word Game
Word Generator
Word Marker
Word Numbers
Words to Shout
Word Strips
Word Tumble
Work Books
Work Sheets
Xerox Activities

PHILADELPHIA TEACHER PARENT CENTER

The Philadelphia Teacher Parent Center, established in 1967, is a staff development facility of the School District of Philadelphia, housed in the Durham Child Development Center, 16th and Lombard Streets, Philadelphia. It is one component of the Learning Centers Project, an E.S.E.A. Title I program of the Office of Early Childhood Education funded through the Office of Federal Programs, School District of Philadelphia.

The Center is a resource for the exploration of instructional materials, for experimentation with different teaching approaches, for discovering new curriculum ideas, and for making classroom games, furniture, and equipment.

The Center offers "released time" all day workshops as well as voluntary after-school and Saturday sessions. Some all-day workshops are specially designed for particular groups of adults such as math resource teachers or parochial school aides. The Center also offers all-day workshops focussed on a theme such as Spring, Trains, or Solar Energy in the Classroom.

The Center advertises its services through booklets, posters and newsletters.

In the 1979-80 school year our staff served over 6,000 people; 3,400 at our Center and 2,600 with our Traveling Teacher Center. We conducted workshops at over 70 Philadelphia Public Schools. Almost every participant made at least one game, learning aid, or piece of educational furniture.

The Philadelphia Teacher Parent Center has a full-time staff of nine people. This group is supported by additional part-time staff. The staff consists of experienced classroom teachers, curriculum specialists and designers. Particular pedagogical expertise is found in the areas of art, mathematics, language arts, thematic education, and environmental education. Our services are focussed on, but not limited to, teachers and parents of pre-school and elementary aged children.

The Center occupies five classrooms on the second floor of a 70 year old brick public school. The building is shared by 30 infants and toddlers, 45 three and four year olds, 250 elementary school children and their respective staffs.

Three of the Center's rooms are joined to form one open space, the Resource Room. Within this one space are various specialty areas including Mathematics, Language Arts, Early Childhood, Science and general work area. Housed in each of the specialty areas are examples of learning aids, games, and equipment that can be made by teachers and parents.

The work area in the Resource Room is focussed around tool and material storage units, and the

laminating machine. Participants can select a work space at any of the tables scattered through the Center.

A hallway with displays and recycled materials separates the Resource Room from the "shop." The shop occupies two former classrooms (a dividing wall retracted). Stationary power equipment includes a table saw, a panel saw, two bandsaws, two drill presses and a disc sander. Portable tools and hand tools are kept in a wall cabinet, along with glue, screws, nails and bolts. Miscellaneous hardware and reserve supplies are kept in cabinets underneath the four work tables. Triwall and lumber are stored around the perimeter of the room. Electrical outlets are suspended above each work table. Additionally, the Center has a central administrative office and storage space located elsewhere in the building.

In the course of the 1979-80 school year the staff of the Philadelphia Teacher Parent Center conducted "Make-It, Take-It" workshops at 69 other Philadelphia public schools. This Traveling Teacher Center was on the road an average of almost two times a week.

Each workshop was preceded by a planning session at the host school run by a Teacher Center staff person and generally attended by the principal, the language arts specialist, the math resource teacher, the union building representative and a Home and School Association member. The planning session touched on the needs of the school, personnel to assist the Teacher Center staff, the availability of teachers and parents, the timing, arrangements for delivery of materials, the workshop space, and the responsibility for pre-session publicity.

Back at the Center, materials are readied for the workshops. Supply boxes are refilled, tools checked, and triwall is pre-cut when necessary. A laminating machine, a complete set of eraser stamps, and as many as 40 sheets of triwall accompanied the Traveling Teacher Center. The workshop at the school lasted from one to three days and involved one to three staff people.

OUR CENTER'S PUBLICATIONS

The Learning Centers Project
The School District of Philadelphia
16th & Lombard Streets
Philadelphia, PA 19146
(215) 732-3205

A Million Twos, Julia Hirsch

A Teacher Center Sampler, Sandy Caesar

Children's Carpentry, John Atwood Mangum

Cinquains, Gloria Bush

Creating a Mathematics Laboratory Environment in the Elementary School, Lore Rasmussen

Disc Book, Janet Felsten and Fred Locke

From Fluorescent Sandpaper to Shiny Orange Poems, Gloria Bush

From "my ball" to "sphere", Lore Rasmussen

Games and Activities for Teaching NUMBERS AND NUMERALS, Julia King

Games and Activities for Teaching THE ALPHABET, Penelope W. Allison

I Am A Poem, Gloria Bush

Pondering, Puzzling, Playing: An Approach to Mathematics for the Young Child, Lore Rasmussen

Spinner Winners

The Flight of Apollo 35, Room 10 Special Team
Gloria Bush, Editor

Using a HUNDRED BOARD, Julia King

Water Pouring, Tamara Rasmussen

Some of the above publications are directly related to the use of the Greatest Hits, such as Using a HUNDRED BOARD and Spinner Winners.

Some of the Greatest Hits, for which no publication yet exists, do have classroom-use handout sheets. This has been indicated under Aids to Fabrication in each item description. If a classroom use handout is available, please write to us; we will be happy to send you a copy.